THE FEDERAL SYSTEM OF INCOME TAX INCENTIVES FOR SCIENTIFIC RESEARCH AND EXPERIMENTAL DEVELOPMENT: EVALUATION REPORT

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Department of Finance Canada
and
Revenue Canada

Canada

THE FEDERAL SYSTEM OF INCOME TAX INCENTIVES FOR SCIENTIFIC RESEARCH AND EXPERIMENTAL DEVELOPMENT: EVALUATION REPORT

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EXECUTIVE SUMMARY

In late 1995 and 1996, the Department of Finance and Revenue Canada conducted a joint evaluation of the performance of the federal income tax incentives for scientific research and experimental development (SR&ED) and their administration in relation to the federal government's objectives for this support and in accordance with Treasury Board guidelines for evaluations. Performance was assessed in terms of the relevance, impacts and effects, cost-effectiveness, and delivery of the SR&ED tax incentives. More specifically, the central evaluation questions in respect of the tax policy underlying the SR&ED tax incentives were:

- the economic rationale for assisting research and development and the mechanisms that are available for doing so;

- the amount of federal income tax assistance currently being provided to SR&ED performers in Canada, and on what and where it is being spent;

- the impact of federal income tax assistance on the level of SR&ED spending and economic activity in Canada, and the cost-effectiveness of this assistance; and

- the extent to which federal income tax assistance for information technology SR&ED is relevant, effective and cost-effective.

The central evaluation questions in respect of the administration of the SR&ED tax incentives were:

- the extent to which the goals and objectives for administration are clearly defined, achieving expected results and, where applicable, appropriately linked to administrative policies;

- the adequacy of processes, procedures and systems now in place to support information needs relating to the SR&ED tax incentives;

- the extent to which administrative policies, procedures, organization and systems provide for effective delivery and an appropriate level of service to clients; and

- the adequacy, precision and appropriateness of processes for scientific review and financial audit and their associated criteria for determining admissibility and accuracy of claims.

This document reports on that evaluation. It describes the SR&ED tax incentives currently provided by the federal government and their administration; reports amounts of SR&ED expenditures, deductions and tax credits for the period 1988 to 1992; identifies the issues for evaluation in relation to the federal policy and administrative objectives underlying the SR&ED tax incentives; presents the methodologies used to evaluate the different aspects of the performance of the SR&ED tax incentives; and sets forth the findings and conclusions of the evaluation.

The SR&ED Tax Incentives

The income tax support for research and development provided by the federal and provincial governments in Canada is widely recognized as among the most favourable in the world.[1] The federal income tax incentives for SR&ED provide broadly based support for all types of SR&ED performed in every industrial sector in Canada. Key elements of the current system include the definitions of SR&ED and qualifying expenditures, income tax deductions and investment tax credits.[2]

The income tax definition of SR&ED is consistent with the internationally accepted definition used by the Organization for Economic Co-operation and Development (OECD). Qualifying current and capital expenditures on SR&ED in Canada are fully deductible – such expenditures not deducted in a year can be carried forward indefinitely.

Investment tax credits are also provided for qualifying current and capital expenditures. The general rate of tax credit is 20 per cent and a 35 per cent rate is available to smaller Canadian-controlled private corporations (CCPCs)[3]. A partial tax credit, equal to one-half of the normal credit, is also available for expenditures in respect of new equipment used primarily (more than 50 per cent) for SR&ED in Canada. SR&ED tax credits may be deducted from federal taxes otherwise payable. Unused credits are refundable for smaller CCPCs at rates of: 100 per cent for up to $2 million of qualifying current expenditures; and 40 per cent for other qualifying expenditures. For other corporations, unused tax credits can be carried back three years or carried forward 10 years. All corporations can assign expected refunds of SR&ED tax credits to lenders as security for bridge financing for their operations.

Administration of the SR&ED Tax Incentives

The policy and legislative functions for administering the SR&ED tax incentives are located in Ottawa in the Scientific Research Section and the Tax Incentive Audit Section of the Verification, Enforcement and Compliance Research Branch (“Headquarters”) of Revenue Canada. The Scientific Research Section provides the scientific and technical expertise necessary to determine the eligibility of work claimed for the SR&ED tax incentives. The Tax Incentive Audit Section provides the financial expertise to determine the eligibility of expenditures claimed for the SR&ED tax incentives. These sections work closely together in developing administrative policy, providing functional guidance and direction for the administration of the SR&ED tax incentives, monitoring the delivery of the tax incentives through offices located

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1 See Warda (1997).

2 In general, R&D tax incentives provided by provincial and territorial governments follow federal SR&ED rules relating to the definitions of qualifying work and expenditures. Provincial governments provide full deductibility for qualifying current and capital expenditures. Six provinces (Manitoba, Newfoundland, New Brunswick, Nova Scotia, Ontario and Quebec) also offer additional income tax incentives in the form of investment tax credits (all six provinces) or additional deductions (Ontario).

3 Specifically, CCPCs with prior-year taxable income under $400,000 and prior-year taxable capital employed in Canada under $15 million.

across the country ("field" offices), servicing the needs of claimants and liaising with the SR&ED community.

The SR&ED tax incentives are delivered through field offices and involve both science and financial review. Science staff are located in regional offices; financial auditors are also located in those offices and in a number of other field offices across the country. The policies and procedures for organizing and managing the delivery of the SR&ED tax incentives within the field offices are determined by local field management and, consequently, may vary somewhat from office to office.

SR&ED claimants have access to an appeals function as part of the Revenue Canada appeals process. Its objective is to resolve disputes for all claimants in an impartial, objective and timely manner. The appeals function dealing with the determination of SR&ED eligibility issues is co-ordinated centrally in Ottawa. Objections to an assessment or reassessment concerning financial expenditures are resolved at the local level.

Evaluation Methodologies

A variety of methodologies were used to address the central evaluation questions. They included: surveys and interviews with industry, administrators and research and development experts; econometric analyses of the responses of corporate SR&ED performers to survey questions relating to incrementality and imitation; analyses of taxation, financial and industry data; and literature reviews.

An extensive series of cross-country interviews and focus group discussions were conducted with management and staff responsible for delivering the SR&ED tax incentives to clients on a daily basis. Industry associations, representing a broad cross-section of the claiming population, were interviewed. Discussions were held with senior professionals involved in science and technology fields from other government departments and within universities. Information was also obtained through the consultations that took place as part of the review of information technology SR&ED undertaken jointly by the Department of Finance and Revenue Canada in 1995.

Data bases maintained by Revenue Canada were an important source of income tax information on SR&ED for the evaluation. In order to supplement these data, two surveys were conducted by Abt Associates of Canada (now ARC, Applied Research Consultants) and Canadian Facts.

The main survey involved 501 firms that claimed SR&ED tax incentives and 27 accounting and consulting firms which assist over 2,000 firms with their SR&ED claims. It addressed evaluation questions pertaining to both SR&ED tax policy and administration, and provided information and insights on:

- the characteristics of the claimants, their decision criteria for investing in SR&ED, the types of SR&ED in which they engage and the manner in which they do so;

- the forms of government support for research and development preferred by industry;

- incrementality, cost-effectiveness and compliance costs related to the federal SR&ED tax incentives;

- innovativeness, imitation and competitiveness; and

- the experience of claimants and accountants with the administration of the SR&ED tax incentives including industry perceptions regarding the level and quality of service received from Revenue Canada.

The findings of this survey and the analysis based on those findings are contained in a background report entitled *Evaluation of Income Tax Incentives for Scientific Research and Experimental Development in Canada: Survey of Claimants.*

Abt Associates and Canadian Facts also conducted a survey of 200 first-time corporate claimants who submitted retroactive claims for SR&ED tax incentives instead of having applied for the SR&ED tax incentives in earlier years. One-half of the survey participants submitted retroactive claims following the 1994 budget announcement which restricted the allowable time period for filing claims; the other half, prior to that time. The survey provided information on why these new claimants did not file claims relating to SR&ED expenditures at the time the expenditures were incurred. The findings are contained in a background report entitled *Survey of New Claimants of Scientific Research and Experimental Development Tax Incentives.*

Key Findings Relating to Tax Policy

The basic structure of the current federal system of income tax incentives for SR&ED was put in place between 1983 and 1985. The policy objectives underlying these incentives were also introduced in 1983. While adjustments have been made to the SR&ED tax incentives since 1983, the policy objectives have not changed. These objectives are to:

- encourage SR&ED to be performed in Canada by the private sector through broadly based support;

- assist small businesses to perform SR&ED;

- provide incentives that are, as much as possible, of immediate benefit;

- provide incentives that are as simple to understand and comply with and as certain in application as possible; and

- promote SR&ED that conforms to sound business practices.

Relevance

Research and development produces technology, a form of knowledge that is used to enhance productivity. Economic theory indicates that technological progress is a key determinant of the longer-term growth of an economy.

The key economic rationale for governments to assist research and development is that the benefits of this work spill over, or extend beyond the performers themselves, to other firms and sectors of the economy so that the value of these benefits is not fully captured by the performer of the research and development. These "spillover benefits" mean that, in the absence of government support, firms would perform less research and development than is desirable from the economy's point of view – i.e. markets fail to allocate an efficient or socially optimal quantity of resources to the performance of research and development. Empirical studies show that spillovers exist and can be of substantial size.

Impacts and Effects

In response to the market failure associated with research and development, most countries provide assistance for this work in the form of tax or non-tax incentives. The specific form of government support used depends on the nature of the market failure and the policy objectives being pursued. Tax and non-tax incentives possess different characteristics and may be used to achieve alternative, but complementary objectives. In terms of their effectiveness, existing evidence seems to favour the use of indirect support such as tax incentives over direct subsidies such as grants.

Many countries have chosen to use income tax incentives to encourage research and development. In general, the incentives focus on research and development undertaken within national boundaries for business purposes. While the OECD's definition of research and development is widely used as a standard, the definitions actually employed for tax purposes differ, sometimes significantly, from this benchmark in order to meet the policy objectives of particular countries. Some tax incentives for research and development are structured to deliver broadly based support; others target specific types of research and development or companies (e.g., new firms, smaller firms or non-taxpaying firms); and still others focus on regional objectives. There are also significant international differences in the design and mix of the tax incentives currently being employed to foster this type of investment. Countries offer various types of accelerated deductions, bonus deductions or investment tax credits based on either total or incremental spending.

The survey of corporations that claimed income tax incentives for SR&ED performed in Canada provided information on both the characteristics of those corporations and the importance they place on the SR&ED tax incentives. In these respects, the survey found that:

- research and development plays a very important role in the corporate strategies of respondents;
- firms undertake research and development primarily to remain competitive;
- internal cash flow is an important consideration in the decision to undertake research and development and government support improves this cash flow;
- the federal SR&ED tax credit was rated as the most important component in the system of government support followed by refundability of the federal credit, while government grants and contracts received the lowest rating;

- on average, respondents had claimed SR&ED tax incentives for seven years;

- there is a strong correlation between firm size, as measured by the number of employees, and the size of SR&ED claims;

- more than half of the firms reported employment growth for the period 1992 to 1994, with medium-sized firms in the area of information technology SR&ED most likely to report employment increases;

- about 30 per cent of the work time of employees is devoted to SR&ED;

- information technology SR&ED accounts for about 35 per cent of the SR&ED performed; manufacturing and processing SR&ED, 25 per cent; and materials SR&ED, 12 per cent; and

- the proportion of non-Canadian ownership is relatively low among firms (Revenue Canada data for 1992 indicate that 94 per cent of corporations claiming the SR&ED tax credits were controlled by Canadians), but increases with the size category of SR&ED claims.

Revenue Canada data reveal that, between 1988 and 1992, current and capital expenditures eligible for the federal SR&ED tax incentives (that is, allowable expenditures) increased in the case of:

- all corporations, by 50 per cent from $4.5 billion in 1988 to $6.9 billion in 1992; and

- smaller CCPCs, by 100 per cent from $0.7 billion in 1988 to $1.4 billion in 1992.

SR&ED may be conducted in-house or on behalf of a taxpayer. Most SR&ED is performed in-house – it accounted for 76 per cent of the $6.9 billion in allowable expenditures claimed in 1992. However, the importance of SR&ED conducted on behalf of taxpayers is growing – the share of contract and third-party payments in allowable expenditures increased from 18 per cent in 1988 to 24 per cent in 1992. In terms of the use of contracts by SR&ED performers, the data indicate that approximately 40 per cent of the 8,725 claims for SR&ED tax credits in 1992 included an amount in respect of contract payments and 10 per cent included an amount in respect of third-party payments. In 1992, contract payments accounted for 43 per cent of total contract and third-party payments.

In 1992, the value of claims for the federal SR&ED tax credits was $1.25 billion, an increase of 60 per cent over the value of claims made in 1988. Smaller CCPCs (i.e. those eligible for the enhanced rate of tax credit) accounted for 30 per cent ($378 million) of the 1992 total and represented 76 per cent (6,632) of the 8,725 claimants in that year. The refundability provisions were also very important for smaller CCPCs; about 80 per cent of SR&ED tax credits earned by smaller CCPCs between 1988 and 1992 were refunded to them.

Four provinces accounted for 96 per cent of the value of SR&ED tax credit claims in 1992 (based on corporate head office reporting). Ontario and Quebec accounted for 82 per cent of these claims; B.C., 8 per cent; and Alberta, 6 per cent. These value shares remained fairly constant over the period 1988 to 1992.

Five industry sectors accounted for 91 per cent of the value of SR&ED tax credit claims in 1992. The manufacturing sector accounted for 48 per cent of these claims; the services sector, 19 per cent; the communication sector, 10 per cent; the wholesale trade sector, 9 per cent; and the finance and real estate sector, 6 per cent. The share of tax credits claimed by the manufacturing sector declined between 1989 and 1992, while the share for the communication and the finance and real estate sectors increased.

Almost 20 per cent of the total number of claims between 1988 and 1992 were in respect of allowable expenditures of less than $20,000; these claims accounted for only 0.4 per cent of the value of SR&ED tax credits claimed in each year. Collectively, 71 per cent of claimants filed SR&ED tax credit claims for under $50,000; these claims accounted for only 8 per cent of the value of all claims for SR&ED tax credits in each year from 1988 to 1992. In contrast, the top 300 claimants in terms of claim size (for 1992, those with claims in excess of $520,000 each) accounted for only 3 per cent of claimants, but about 70 per cent of the value of all tax credit claims over the period.

Revenue Canada data for 1990 to 1992 on claims by unincorporated businesses for SR&ED tax credits reveal that:

- the value of these claims averaged only $8.6 million per year over the period, and decreased by 36 per cent from $10.6 million in 1990 to $6.7 million in 1992; and

- the number of unincorporated businesses claiming SR&ED tax credits also decreased by 36 per cent from 4,772 in 1990 to 3,051 in 1992.

Cost-Effectiveness

Government fiscal policies are designed to affect the behaviour of individuals and firms, and by so doing, to increase the overall benefit to society. Cost-effectiveness provides a perspective on whether or not a policy can achieve this goal by comparing the incremental change in economic behaviour induced by the policy to forgone government revenues. For example, if one dollar of tax revenues forgone generates at least one dollar of spending in the target activity or, alternatively, if the ratio of incremental expenditures to tax revenues forgone is greater than or equal to unity, then the policy is said to be cost-effective and may result in a net gain for the Canadian economy.

Existing studies provide empirical evidence on the cost-effectiveness of income tax incentives for research and development in Canada and other countries. These studies have used both econometric analysis and survey techniques. However, the Canadian studies are relatively dated and apply to tax incentive regimes that are different than that currently in place in Canada and the subject of this evaluation. The international studies, while more recent, also apply to different incentive regimes. While the results of these various studies are mixed in terms of their findings

in respect of cost-effectiveness, and difficult to compare given the fundamental differences in the research and development tax incentives subject to examination, they do reveal that tax-based incentives may be cost-effective in stimulating additional research and development. The current system of federal SR&ED tax incentives was designed, in part, to respond to concerns that had been raised about the cost-effectiveness of previous federal tax incentives for SR&ED.

In this evaluation, the cost-effectiveness of the SR&ED tax incentives was measured as the increase in SR&ED spending induced by the tax incentives – their incrementality – per dollar of federal tax revenues forgone. Incrementality of the SR&ED tax incentives was addressed through the survey of corporations that claimed them. Survey respondents indicated that the incentives have a substantial impact on their spending. Expenditure reductions in the absence of the tax incentives would have had a variety of impacts: reducing the scale of projects; postponing projects; and cancelling projects. Fewer firms reported that they would shift work outside Canada.

To arrive at an overall incrementality estimate, the incrementality responses of the individual survey participants were weighted by the expenditures of each firm. Weighted incrementality was found to be 32 per cent; in other words, reported SR&ED expenditures were 32 per cent higher as a result of the federal SR&ED tax incentives.

Econometric analysis of the survey results showed no statistically significant difference in the incrementality results for information technology firms versus other firms. Regression results also revealed the role of the SR&ED tax incentives in the decision-making process of firms. In particular, firms for which after-tax rate of return and cash flow considerations are more important tend to be more responsive to the SR&ED tax incentives. Similarly, firms regarding research and development as crucial to their success reported a lower degree of incrementality. Two observable characteristics of firms were found to be statistically significant in the incrementality regressions, but the magnitude of these effects is small. Specifically, firms that have a greater percentage of new (as opposed to improved) product or process SR&ED and that have SR&ED results subject to intellectual property protection tend to be more responsive to the incentives. All other observable firm characteristics, such as size, sector, age, ownership and intensity of research and development, were found not to be statistically significant. This implies that targeting SR&ED tax incentives to these firm characteristics would not likely increase their incrementality (or their cost-effectiveness).

Federal tax revenues forgone were estimated for individual survey participants based on the SR&ED tax incentives available to the firms, the federal corporate tax rate applicable to them and their SR&ED spending. The tax costs were summed across all survey firms to obtain the total SR&ED tax costs to the federal government.

The survey findings relating to incrementality and the estimate of the federal tax cost of the SR&ED tax incentives result in a cost-effectiveness ratio of 1:38. This means that each dollar of tax revenues forgone as a result of the tax incentives generated $1.38 in additional SR&ED spending; in other words, the federal SR&ED tax incentives were found to be cost-effective.

Impacts on the Canadian Economy

Cost-effectiveness does not account for all of the economic benefits and costs associated with providing the federal income tax incentives for SR&ED. Consequently, economic modelling was also undertaken to provide another perspective on how such a policy can affect the overall benefit to society. Specifically, a static computable general equilibrium (CGE) model of the Canadian economy, based on 1992 data, was used to assess the potential net economic impacts of using an incentive for research and development (R&D), funded through taxation, to stimulate investment in research and development by the private sector. For this purpose, the CGE model took account of literature estimates of research and development spillovers for the Canadian economy, the cost-effectiveness result for the SR&ED tax incentives and the amount of SR&ED tax credits claimed in 1992.

An incentive for research and development corrects for the market's failure to direct sufficient resources to this work. Such an incentive stimulates investment in research and development. This increased investment, in turn, results in spillover benefits for the Canadian economy which were modelled as a decrease in the costs of production for all firms. For this purpose, the lowest average of literature estimates on the size of spillover benefits from R&D for certain manufacturing industries in Canada was used. However, the incentive must also be funded. This was done in the model by increasing existing personal, corporate, payroll and commodity taxes. The combined impacts of the spillover benefits and the tax increases were found to result in a net gain in real income ranging from, on average, two to four cents for every dollar of incentive for a total increase in Canadian real income of between $20 million and $55 million per annum. It should be stressed that this is the lower limit of the net gain as it is based on the lower limit of the range of spillover estimates reported in the literature. The net gain will be larger, the greater is the size of the research and development spillover included in the model.

Key Findings Relating to Administrative Policy

Administrative policy for the SR&ED tax incentives is developed and delivered by Revenue Canada. It is based on the guiding principles of SR&ED tax policy issued in 1983 by the Department of Finance. These principles have remained relevant and are well supported by the SR&ED community. Accordingly, they form the basis for the administrative objectives. The administrative objectives are to:

- increase awareness and understanding of the availability of the SR&ED tax incentives;
- promote accessibility of the SR&ED tax incentives to the targeted clientele;
- ensure the validity, completeness and accuracy of claims made;
- deliver a timely and cost-effective incentive; and
- ensure consistency and predictability in delivering the SR&ED tax incentives.

During the course of the evaluation, the administration of the SR&ED tax incentives was undergoing numerous and dynamic changes. In April 1997, the Minister of National Revenue made an announcement detailing many of the administrative changes that had occurred or were about to occur. The summary observations provided below reflect many of these changes.

Goals and Objectives

The goals and objectives for delivery of the SR&ED tax support, although well understood, were implied rather than clearly articulated until the early 1990s. Since then, there has been continual refinement of high-level goals into operational objectives and standards. However, these standards have been difficult to meet during the period of unexpectedly high workload pressures, which resulted from legislative changes in 1994.

As the workload becomes more manageable, operational standards can realistically be put in place and achieved. For example, Revenue Canada has renewed its commitments to corporations to:

- issue a refund cheque within 120 days of receiving a completed claim for a refundable tax credit; and

- inform the corporation within 120 days of receiving a completed claim for a non-refundable tax credit whether or not it will be accepted as filed or an audit will be conducted and, if an audit is to be conducted, offer the corporation the choice of having it completed within one year.

This service will benefit many smaller businesses, especially those that are concerned over the timing of their cash flows. Another initiative under consideration is to look at ways to pre-file Form T661 in advance of the complete tax return in an effort to streamline delivery of the SR&ED tax credits.

Information Management

The information requirements to properly manage and monitor the SR&ED tax incentives have not been well served by the present data system. Information is collected in separate data bases that function independently of each other and have proven difficult to link. There have also been changes to the types of data that are captured and the way in which data is collected resulting from legislative, administrative and system changes. These changes make it difficult to compile a time series for certain data to be able to track trends or changing patterns in claims.

Recent revisions to the data systems include additional fields of information being collected. These new data will enhance the capability for monitoring the SR&ED tax incentives and their delivery. Additionally, some successful linking of two of the data bases has improved the information available on the SR&ED tax incentives for management in both Revenue Canada and the Department of Finance. Existing and future information needs are being identified and addressed on both a short-term and long-term basis. Presently, ways are being explored to improve the efficiency of the data system through the on-line collection of electronic data submitted by taxpayers.

Policies and Procedures

Policy development and interpretation have improved significantly over the past few years. The organization, procedures and systems have been severely tested over the past two years with the huge influx of taxpayer-requested adjustments (TPRs) relating to the 1994 budget change that restricted the time period in which a taxpayer can identify expenditures that qualify for the SR&ED tax incentives. Many of these TPRs were of poor quality with little supporting documentation. Service to clients has been compromised during this time. However, offices have adapted under the circumstances, developing special procedures and adopting best practices used in other regions.

New administrative guidelines issued during this period of high workload have enhanced the information available to claimants and support to field offices in reviewing claims. These publications have been well received by both taxpayers and staff as they clarify issues and contribute to consistency in the review of claims.

In February 1997, Revenue Canada released revised guidelines for software development; namely, Information Circular 97-1, *Scientific Research and Experimental Development – Administrative Guidelines for Software Development.* These guidelines were developed in consultation with the information technology industry, a panel of experts which included members nominated by industry associations, and an interdepartmental committee representing Revenue Canada, the Department of Finance, Industry Canada and the National Research Council. Additionally, Revenue Canada held information seminars across the country after the release of the paper.

A similar consultative process is being used to revise Information Circular 86-4, *Scientific Research and Experimental Development*, which sets out the general administrative guidelines on what constitutes SR&ED according to income tax legislation. This process will include review by a large number of specialists from a wide range of industry sectors and posting draft versions of these guidelines on the Internet for public comment.

Claim Review

The scientific review and audit verification processes work better, in terms of securing compliance, than is generally perceived. The processes and criteria are appropriate and, given full claim information, neutral in application. Some clients are of the opinion that decisions taken by reviewers are inconsistent across the country, especially in the area of scientific or technical eligibility. The evaluation, however, did not reveal any evidence of a serious problem in this area. The criticism is primarily anecdotal in nature with little evidence in the form of written complaint, formal objections or appeals against decisions.

Nonetheless, Revenue Canada is continuing to improve the process of claim review by developing new administrative guidelines. To address the concerns raised regarding inconsistencies in science review, the department is currently engaging sector specialists who will act as key contact points for industry associations. These specialists will ensure that each sector is covered by a team of qualified reviewers and will develop strategies to provide consistent application of the criteria and treatment of claimants within their sector. This will address concerns over regional differences in the application of the guidelines as the specialists

take on a centralized management function. To enhance liaison with the various industry sectors, and to access current knowledge and practices, these specialists will be part of an interchange program with industry. Additionally, new staff and consultants will be provided with appropriate training to ensure that they are familiar with current procedures and policies.

Compliance

The dynamics of administering the SR&ED tax incentives have changed over the past few years. In addition to large growth in the number of claimants, more non-refundable claims are being submitted by large corporations and many smaller firms are submitting aggressive, but poorly supported, claims. Survey participants and industry associations that were interviewed noted that Revenue Canada appears to be taking a tougher stance to ensure compliance, in terms of what is eligible and what documentation is required, than was previously the case, although no official or formal changes to operational procedures have been issued.

In order to better inform claimants about the SR&ED tax incentives, Revenue Canada is increasing the number and focus of information sessions and providing revised documentation which details the requirements to comply with the legislation and submit a complete claim. The accounting sector will be a specific target for information sessions and material.

Awareness

Despite a national effort to provide regional information seminars, the evaluation found that many recent new clients claimed to have had no previous knowledge of the existence of the SR&ED tax incentives, despite their eligibility to submit claims. Most of these new clients were made aware of the tax incentives through their accountant or a tax consultant. Most became first-time claimants when they filed a TPR in response to the 1994 budget change that restricted the time period in which a taxpayer can identify expenditures that qualify for the SR&ED tax incentives.

Presently, Revenue Canada is focusing on promoting the SR&ED tax incentives and providing more information to claimants and potential claimants through an outreach campaign. This approach will include opening new offices, providing public seminars, increasing the availability of staff to answer telephone enquiries, encouraging closer partnerships with industry associations, and making greater use of the Revenue Canada Internet site. This Internet site will be linked to other government and science sites.

Science Access is a program delivering a number of advisory services which will help, in particular, new claimants who are not certain of eligibility requirements, or what data is required to be captured, as well as other aspects of making a proper and complete claim. The services will include public seminars, individual taxpayer education, first-time claimant service and a Preclaim Project Review (PCPR). This optional review will provide up-front certainty about the eligibility of projects either before they are started or even once they are in progress.

Costs of Complying

The costs of complying with the requirements for securing SR&ED tax credits vary significantly by claim size. Survey results found that compliance costs for:

- large tax credit claims (more than $500,000) are 5.5 per cent of the value of SR&ED tax credits claimed;

- medium tax credit claims (between $100,000 and $500,000), 10 per cent; and

- small tax credit claims (less than $100,000), 15 per cent.

Compliance costs in the first year in which claims for SR&ED tax credits are made are higher. They are: 8 per cent of the value of tax credits claimed for large claims; 13 per cent, for medium claims; and 21 per cent, for small claims.

Although the survey did not reveal significant concern by clients with these costs, it has been noted that for many small businesses, the costs of compliance could be reduced. As a result, Revenue Canada is undertaking to simplify and streamline Form T661 for smaller claimants. This form will also capture certain data required by Statistics Canada, thus eliminating the requirement for corporations to complete two forms to provide the same information.

Administrative Summary

The administration of the SR&ED tax incentives has undergone dynamic change in the past few years and will continue to evolve. Change has brought about negative and positive impacts. Recognition of the need for enhanced compliance has negatively affected some clients but, in the longer term, protects the SR&ED tax incentives for the compliant segment of the population. Overall, the quality of delivery has improved significantly and, as workload normalizes, improved levels of service, particularly timeliness, can be expected.

In general, clients commend the design of the SR&ED tax incentives and the high level of support they provide to the Canadian industry for research and development. While there have been recent difficulties in meeting service standards, changes are being made by Revenue Canada to improve the delivery of the SR&ED tax incentives. These changes include additional resources, streamlined procedures, enhanced information for management and increased consultation with client groups.

Chapter I
INTRODUCTION

Purpose of the Report

In late 1995 and 1996, the Department of Finance and Revenue Canada conducted a joint evaluation of the performance of the federal income tax incentives for scientific research and experimental development (SR&ED) and their administration in relation to the federal government's objectives for this support and in accordance with Treasury Board guidelines for evaluations.[4] Performance was assessed in terms of the relevance, impacts and effects, cost-effectiveness, and delivery of the federal SR&ED tax incentives.

This document reports on that evaluation. It describes the SR&ED tax incentives currently provided by the federal government and their administration, reports amounts of SR&ED expenditures, deductions and tax credits for the period 1988 to 1992, identifies the issues for evaluation in relation to the federal policy and administrative objectives underlying the SR&ED tax incentives, presents the methodologies used to evaluate the different aspects of the performance of the SR&ED tax incentives, and sets forth the findings and conclusions of the evaluation.

Organization of the Report

Chapter II reviews the current system of federal income tax incentives for SR&ED and the administration of these incentives by Revenue Canada. It provides a description of the SR&ED tax incentives, a discussion of the federal policies and processes for administering them, and a profile of the various mechanisms for monitoring and managing them.

Chapter III addresses certain aspects of the central evaluation question on the impacts and effects of the SR&ED tax incentives, and complements other information on this question, obtained from surveys and literature reviews, provided in Chapter IV. Specifically, Chapter III draws on information contained in Revenue Canada data bases and reports amounts of SR&ED expenditures, deductions and tax credits claimed and refunded by all corporations and smaller Canadian-controlled private corporations (CCPCs)[5] between 1988 and 1992. Amounts of tax credits claimed by all corporations and smaller CCPCs are also identified by, for example, size of claim, region, industry sector, taxpaying status and non-resident ownership. Profiles for unincorporated businesses that claimed SR&ED tax credits were developed using Revenue

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4 The Department of Finance is the federal department primarily responsible for providing analysis and advice on matters of tax policy. Revenue Canada is the federal department responsible for administering the income tax provisions. Treasury Board of Canada (1992) provides guidelines for the conduct of evaluations by the federal government.

5 Smaller CCPCs are Canadian-controlled private corporations with prior-year taxable income under $400,000 and prior-year taxable capital employed in Canada under $15 million. These corporations are eligible for a higher rate of federal investment tax credit for SR&ED than other corporations.

Canada data for 1990 to 1992 on, for example, the total and taxable income and age of individuals performing SR&ED in a business context and the region in which they reside.

Chapter IV outlines the policy and administrative objectives underlying the SR&ED tax incentives; identifies the specific evaluation questions in relation to those federal objectives; and presents the methodologies used to evaluate different aspects of the performance of the federal SR&ED tax incentives. It then reports the findings of the evaluation in terms of the relevance, impacts and effects, cost-effectiveness, and delivery of the SR&ED tax incentives in relation to their policy and administrative objectives.

Annex I reviews the income tax incentives for research and development provided by provincial governments and examines, by province and type of firm, the relative incentive to invest in research and development provided through the income tax system by the federal and provincial governments. Annex II briefly reviews alternative methodological approaches that can be used to estimate the incrementality of income tax incentives for research and development and to obtain other information on research and development tax incentives that is not available in Revenue Canada data bases.

There are also three background documents to this evaluation report which are available on request. They are:

- *Survey of Scientific Research and Experimental Development Claimants*, report prepared for the Department of Finance and Revenue Canada, Abt Associates of Canada: Social Research Consultants, June 1996;

- *Survey of New Claimants of Scientific Research and Experimental Development Tax Incentives*, report prepared for Revenue Canada, Abt Associates of Canada: Social Research Consultants, May 1996; and

- *Why and How Governments Support Research and Development*, paper prepared by the Department of Finance, December 1997.

Chapter II
THE FEDERAL SR&ED TAX INCENTIVES AND THEIR ADMINISTRATION

The federal government provides income tax incentives, in the form of income tax deductions and investment tax credits, to businesses that perform scientific research and experimental development (SR&ED) in Canada. The income tax definition of SR&ED is consistent with the internationally accepted definition used by the Organization for Economic Co-operation and Development (OECD).[6] Federal income tax assistance for SR&ED is a key component of the federal government's efforts to support and foster advancements in science and technology.[7]

All provincial governments also support research and development through income tax deductions and six provinces (Manitoba, Newfoundland, New Brunswick, Nova Scotia, Ontario and Quebec) offer various types of additional income tax incentives for research and development. The tax support for research and development provided by the federal and provincial governments is widely recognized as among the most favourable in the world.[8]

This chapter reviews the current system of federal income tax incentives for SR&ED and the administration of these incentives by Revenue Canada; provincial income tax incentives for research and development are discussed in Annex I. The next section describes the federal SR&ED tax incentives. This is followed by a discussion of the federal policies and processes

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6 See OECD (1994), Chapter 2, pp. 29-45. The OECD defines research and development as creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications. This work may take the form of basic research, applied research or experimental development. The OECD also discusses (see Chapter 1, pp. 18-21) the distinction between research and development and other closely related activities that can be grouped more broadly under the headings of scientific and technological activities (STA) and scientific and technological innovation (STI). STA comprise systematic activities which are closely concerned with the generation, advancement, dissemination and application of scientific and technical knowledge in all fields of science and technology. These include such activities as research and development, scientific and technical education and training, and scientific and technological services. STI may be considered as the transformation of an idea into a new or improved product introduced on the market or a new or improved operational process used in industry or commerce. Innovations involve a series of scientific, technological, organizational, financial and commercial activities. Research and development is only one of these activities and may be carried out at different phases of the innovation process.

7 Total federal support for science and technology (or STA; see previous footnote) was about $7.0 billion in 1996-97. Revenue Canada data indicates that investment tax credits for SR&ED performed by, or on behalf of, businesses accounted for $1.25 billion of this amount. Statistics Canada (1997) indicates that non-tax assistance for science and technology was $5.7 billion of which $2.3 billion was for activities related to research and development (e.g., education and training, data collection and information) and $3.4 billion was for research and development *per se*. The non-tax funding was directed to science and technology performed by federal government employees (60.8 per cent), Canadian businesses (15.7 per cent), Canadian universities (15.5 per cent), other Canadian performers such as private non-profit institutions, other levels of government and provincial research councils and foundations (3.6 per cent), and foreign performers (4.3 per cent).

8 See, for example, Warda (1997).

for administering these tax incentives. The final section outlines the various mechanisms for monitoring and managing the federal incentives.

The Federal SR&ED Tax Incentives

The federal government has provided income tax incentives for research and development since 1944 and there have been many changes over the years. Delivery mechanisms have included accelerated deductions, incremental bonus deductions and investment tax credits, and have been designed to include both regional and small business considerations. The basic structure of the current system of federal income tax incentives for SR&ED was put in place between 1983 and 1985, but has continued to evolve since then. Key elements of the current system include the definitions of SR&ED and allowable SR&ED expenditures, income tax deductions and investment tax credits. Each of these elements is described below.

Definition of SR&ED

SR&ED is defined in income tax legislation to be systematic investigation or search carried out in a field of science or technology by means of experiment or analysis. The following three broad categories of work are eligible:

- basic research;
- applied research; and
- experimental development.

Basic research is work undertaken for the advancement of scientific knowledge without a specific practical application in view. Applied research is work undertaken for the advancement of scientific knowledge with a specific practical application in view. Experimental development is work undertaken for the purposes of achieving technological advancement for the purposes of creating new, or improving existing, materials, devices, products or processes, including incremental improvements thereto. The vast majority of the claims for the SR&ED tax incentives are for experimental development.

Certain support work is also eligible where it is commensurate with the needs, and directly in support of basic research, applied research or experimental development. To be eligible, the support work must be in respect of engineering, design, operations research, mathematical analysis, computer programming, data collection, testing and psychological research.

There is also certain work that is excluded from the definition of SR&ED.[9] Excluded work includes: market research or sales promotion; quality control or routine testing of materials, devices, products or processes; research in the social sciences or the humanities; prospecting, exploring or drilling for, or producing, minerals, petroleum or natural gas; the commercial production of a new or improved material, device or product or the commercial use of a new or improved process; styles changes; and routine data collection.

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9 This work is also not generally in accordance with the internationally accepted OECD definition.

Eligible Expenditures

1) SR&ED in Canada

Current and capital expenditures in respect of SR&ED in Canada performed by, or on behalf of, a taxpayer and related to a business of the taxpayer including a possible extension of that business, may be eligible for the SR&ED tax incentives. In addition, expenditures on equipment used primarily (more than 50 per cent) for SR&ED in Canada may earn a partial tax credit.

However, not all current and capital expenditures incurred for SR&ED in Canada are eligible for these tax incentives. For example, capital expenditures for the acquisition of land or buildings (other than a prescribed special purpose building), and current expenditures for related rental or leasehold payments are not allowable SR&ED expenditures. Also excluded are expenditures made to acquire rights in, or arising out of, SR&ED. Furthermore, some expenditures that are eligible for SR&ED income tax deductions are not eligible for SR&ED investment tax credits; for example, interest costs, legal and accounting fees, advertising or selling expenses. As well, while the costs of equipment used primarily for SR&ED in Canada may earn a partial tax credit, they are not eligible for an SR&ED tax deduction – instead, these expenditures are depreciable under the normal system of capital cost allowances.

In general, current expenditures that are eligible for the SR&ED tax incentives include:

- salaries or wages of employees directly engaged in SR&ED[10];
- the cost of materials consumed in SR&ED;
- lease costs relating to machinery and equipment used all or substantially all (90 per cent or more) for SR&ED;
- eligible expenditures incurred by contractors performing SR&ED directly on behalf of the taxpayer[11]; and

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10 There are special rules for salaries or wages paid to a "specified employee" – a person who does not deal at arm's length with their employer or who has a significant interest (i.e. 10 per cent or more) in the shares of their employer. These rules place a ceiling on the amount of salaries or wages paid to these employees who are eligible for the SR&ED tax incentives. Salaries or wages of specified employees directly engaged in SR&ED are limited to a maximum of five times the year's maximum pensionable earnings for purposes of the Canada Pension Plan and exclude any remuneration based on profits or bonuses.

11 Where SR&ED is performed under contract between non-arm's length parties, expenditures eligible for the SR&ED tax credits are restricted to those incurred by the SR&ED performer. The performer can transfer these expenditures to the payor up to a maximum of the contract amount. The contract payment itself is not an eligible expenditure for tax credit purposes and does not reduce the eligible expenditures of the performer. In addition, where goods or services for SR&ED are purchased by an SR&ED performer from a person with whom the performer does not deal at arm's length, expenditures eligible for SR&ED tax credits are limited to the cost to the non-arm's length person of providing the goods or services.

– eligible expenditures incurred by certain third parties where the taxpayer is entitled to exploit the results of the SR&ED[12].

In general, capital expenditures that are eligible for the SR&ED tax incentives consist of expenditures for machinery and equipment that is all or substantially all used or consumed in the performance of SR&ED in Canada.

Taxpayers have a choice in how they wish to treat overhead and administrative expenditures for a taxation year. They can use either the traditional method or the "proxy method" for allocating these expenditures. Under the traditional method, overhead and administrative expenditures must be specifically identified and allocated in respect of SR&ED and may be eligible for both the SR&ED tax deduction and credits. Under the proxy method, these costs are deductible as ordinary overhead and administrative expenses and a notional amount is calculated which is eligible for the SR&ED tax credits. The notional amount for overhead and administrative costs is 65 per cent of salaries or wages (other than benefits, bonuses and unpaid amounts[13]) in respect of employees directly engaged in SR&ED; for example, the salaries of researchers carrying out experiments.[14] Salaries or wages of administrative staff who are providing a service to the SR&ED staff are not included as these amounts are captured as part of the overhead proxy (as are other types of overhead expenses). The use of the proxy method is optional. However, once the choice is made, it is irrevocable for that taxation year.

2) SR&ED Outside Canada

Current expenditures in respect of SR&ED performed outside Canada by, or on behalf of, a taxpayer and related to the business of the taxpayer may also be eligible to be deducted as SR&ED expenditures. In this case, the current expenditures must be either all or substantially all (90 per cent or more) attributable or directly attributable to the performance of SR&ED. Directly attributable current expenditures are defined by regulation to be costs of materials consumed in SR&ED, salaries or wages of employees undertaking, supervising or supporting SR&ED, and other expenditures directly related to SR&ED that would not have been incurred in the absence

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12 Eligible third parties are corporations resident in Canada including tax exempt non-profit SR&ED corporations and approved associations, universities, colleges, research institutes and organizations. In addition, tax-exempt non-profit SR&ED corporations resident in Canada are eligible third parties if the taxpayer is a corporation and the SR&ED is basic or applied research that relates to other SR&ED being undertaken by the taxpayer and which has the technological potential for application to other unrelated businesses.

13 Current expenditures that are not paid within 180 days of year end are deemed to have been incurred for SR&ED tax credit purposes in the year the amount is paid.

14 For purposes of the overhead proxy, salaries or wages of specified employees (see footnote 7) are limited to a maximum of two-and-one-half times the year's maximum pensionable earnings for purposes of the Canada Pension Plan and exclude any remuneration based on profits or bonuses.

of the SR&ED. The current expenditures may be incurred by contractors performing SR&ED directly on behalf of the taxpayer or, where the taxpayer is entitled to exploit the results of the SR&ED, by certain third parties.[15]

Current expenditures incurred for SR&ED outside Canada are not eligible for the SR&ED tax credits. Furthermore, capital expenditures in respect of SR&ED performed outside Canada do not qualify for either an SR&ED tax deduction or the tax credits.

3) Government and Non-Government Assistance

Both government and non-government assistance receivable by a taxpayer in a taxation year reduce the amount of expenditures available for the SR&ED tax incentives in that year. Government assistance is defined to include all forms of assistance from a public authority other than SR&ED tax credits. The amount of SR&ED tax credits used in a taxation year reduces the amount of eligible expenditures in the following taxation year. Non-government assistance includes any amount received by a taxpayer from any other person that can reasonably be considered an inducement, reimbursement, contribution, allowance or assistance.

SR&ED Tax Deductions

1) SR&ED in Canada

Taxpayers are allowed to fully deduct eligible current and capital expenditures in respect of SR&ED incurred in the year. SR&ED expenditures that are not deducted in a year can be carried forward indefinitely. This is accomplished through the use of an SR&ED expenditure pool with an unlimited carry-forward period. SR&ED expenditures incurred in a year are added to the expenditure pool and can be deducted to the extent desired by the taxpayer. The pool balance remaining at the end of a year becomes the opening balance of the subsequent year.

There are two key differences between these income tax deductions for SR&ED expenditures and most other types of expenditures:

- SR&ED capital expenditures can be fully deducted in the year incurred – capital expenditures are normally deductible over time through the capital cost allowance system; and

- SR&ED current expenditures can be carried forward indefinitely – current expenditures are normally deductible only in the year incurred, and may create a non-capital loss which can generally be carried back three years or forward seven years.

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15 These third parties are approved associations, universities, colleges, research institutes or other similar institutions which undertake SR&ED outside Canada.

2) SR&ED Outside Canada

Eligible current expenditures on SR&ED carried on outside Canada are fully deductible in calculating taxable income for a taxation year. However, this deduction is not the same as that provided for SR&ED in Canada. In particular, current expenditures on SR&ED performed outside Canada are not included in the SR&ED expenditure pool, cannot be carried forward and must be deducted in the year the expenditure is incurred. In general, capital expenditures on SR&ED incurred outside Canada are deductible under the system of capital cost allowances.

SR&ED Tax Credits

There are currently two rates of investment tax credit for SR&ED in Canada: a general rate of 20 per cent and an enhanced rate of 35 per cent for smaller Canadian-controlled private corporations (CCPCs) – i.e. CCPCs with prior-year taxable income under $400,000 and prior-year taxable capital employed in Canada under $15 million. From 1983 through 1994, a 30 per cent rate of tax credit was also available for SR&ED expenditures incurred in the Atlantic Provinces and the Gaspé region.[16]

The amount of SR&ED expenditures that can earn tax credits at the enhanced rate is referred to as the expenditure limit. The expenditure limit is generally $2 million for CCPCs with prior-year taxable income of $200,000 or less. This expenditure limit is reduced on the basis of the following two criteria. First, the expenditure limit is phased out for CCPCs with prior-year taxable income between $200,000 and $400,000. For each dollar by which taxable income for the prior year exceeds $200,000, the SR&ED expenditure limit for the year is reduced by $10. In addition, the expenditure limit is phased out for CCPCs with prior-year taxable capital employed in Canada between $10 million and $15 million. For every $10 by which taxable capital employed in Canada for the prior year exceeds $10 million, the SR&ED expenditure limit for the year is reduced by $4.[17]

A partial tax credit, equal to one-half of the normal credit, is also available for expenditures in respect of new equipment used primarily for SR&ED in Canada. This partial credit is earned in two instalments. The first instalment – one-half of the partial credit (i.e. one-quarter of the full credit) – is earned in the first taxation year that ends at least 12 months after acquisition of the equipment (i.e. the initial period). The second instalment is earned in the taxation year that ends at least 24 months after acquisition.[18]

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16 This regional tax credit was generally eliminated for SR&ED expenditures incurred after 1994.

17 Thus, the maximum amount of SR&ED tax credit available for smaller CCPCs at the enhanced rate is $700,000, which corresponds to eligible expenditures of $2 million.

18 These credits are only available to equipment that is used primarily in SR&ED during the initial period – i.e. the time between acquisition and the end of the first taxation year that is at least 12 months after acquisition. Equipment not used primarily in SR&ED during the initial period would never be eligible for partial tax credits.

Investment tax credits may be deducted from federal taxes otherwise payable. Unused tax credits can be carried back three years (to the extent that they were not deductible in the year they were earned) or carried forward 10 years. In addition, unincorporated businesses and smaller CCPCs can obtain a refund of unused credits earned in a year. The general rate of refund is 40 per cent for both current and capital expenditures. However, current expenditures that earn SR&ED tax credits at the 35 per cent rate are fully refundable.[19] Corporations can also assign expected refunds of SR&ED tax credits to lenders as security for bridge financing for their operations. Such assignments, however, are not binding on the Crown. Table 2.1 summarizes federal SR&ED tax credit rates and rates of refundability.

Administration of the SR&ED Tax Incentives

Revenue Canada is responsible for administering the SR&ED tax incentives provided by the federal government and, in accordance with the Tax Collection Agreements, the tax incentives for research and development provided by Manitoba, New Brunswick, Newfoundland and Nova Scotia. Ontario and Quebec do not have agreements with the federal government for administering their provincial corporate income tax and, accordingly, administer their own research and development tax incentives.

Revenue Canada: Structure and Processes

The policy and legislative functions for administering the federal SR&ED tax incentives are located in Ottawa in the Verification, Enforcement and Compliance Research Branch ("Headquarters") which is responsible for the administration of all audit programs in Revenue Canada. The SR&ED administration function is centred in two groups within the Branch:

- the Scientific Research Section – Science advisors and technical consultants employed under contract[20] provide the scientific or technical expertise necessary to determine the eligibility of work claimed for the SR&ED tax incentives or to service the needs of claimants. The mandate of the section is to provide leadership and direction in the promotion and delivery of the SR&ED tax incentives, to ensure consistency in applying the meaning of SR&ED across Canada, and to ensure consistency in the quality of the scientific advice provided to Revenue Canada and taxpayers.

- the Tax Incentive Audit Section – Auditors provide the financial expertise to determine the eligibility of expenditures claimed for the SR&ED tax incentives or to service the needs of claimants. The mandate of the section is to enhance awareness of the availability of the tax incentives; to facilitate access to the tax incentives; to obtain a high standard of self-assessment; to provide assistance in delivering the tax incentives in a timely manner; and to minimize uncertainty to clients.

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19 Other than for corporations controlled by tax-exempt entities, provincial or municipal governments, or other public authorities.

20 Technical consultants may be employed on a temporary basis either to provide specialized knowledge or to assist with large work loads.

Table 2.1
Federal SR&ED Tax Credit Rates and Rates of Refundability (%)[1]

Business Type	Credit Rates	Refundability Rates	
		Current Expenditures	Capital Expenditures
Unincorporated Businesses	20	40	40
CCPCs with prior-year taxable income,			
- of $200,000 or less:			
Expenditures up to expenditure limit[2]	35	100	40
Expenditures over expenditure limit	20	40	40
- between $200,000 and $400,000:			
Expenditures up to expenditure limit[3]	35	100	40
Expenditures over expenditure limit	20	0	0
CCPCs with prior-year taxable capital employed in Canada between $10 million and $15 million:			
Expenditures up to expenditure limit[4]	35	100	40
Expenditures over expenditure limit	20	0	0
All Other Corporations	20	0	0

[1] A 30% rate of tax credit was also available for SR&ED expenditures incurred in the Atlantic Provinces and the Gaspé region from 1983 through 1994.

[2] Expenditure limit is generally $2 million per annum.

[3] Expenditure limit for CCPCs is phased out for prior-year taxable income between $200,000 and $400,000.

[4] Expenditure limit for CCPCs is phased out for prior-year taxable capital employed in Canada between $10 million and $15 million.

These sections work closely together in developing administrative policy; providing functional guidance and direction for the administration of the SR&ED tax incentives; monitoring the delivery of the tax incentives through offices located across the country ("field" offices); and liaising with the SR&ED community.

The SR&ED tax incentives are delivered through field offices by both science and audit staff. Claims, sent by the taxpayer to the local taxation centre as part of their annual tax return, are forwarded to the associated regional office where they receive an initial review for completeness. If a claim is not complete, the taxpayer is contacted and requested to provide any missing information. Once complete, claims are reviewed by a science advisor or a technical consultant to verify that the underlying work meets the definition of SR&ED. Science advisors are located in seven regional Co-ordinating Tax Services Offices. The work claimed may be found to meet the definition fully, partially or not at all. Expenditures relating to eligible SR&ED then receive a financial review to assure the validity of the costs claimed. Depending on various criteria, claims may receive a limited review or undergo a complete audit. The financial review is undertaken by auditors located in 38 Tax Services Offices across the country. The policies and procedures for organizing and managing the delivery of the SR&ED tax incentives within the field offices are determined by local field management and consequently may vary somewhat from office to office.

SR&ED claimants have access to an appeals function as part of the Revenue Canada appeals process. The objective of the Appeals Program is to resolve disputes for all claimants in an impartial, objective and timely manner. Any claimant who objects to an assessment or reassessment, as determined by the department, may file a Notice of Objection at their local office.

The appeals function dealing with the determination of SR&ED eligibility issues is co-ordinated centrally in Ottawa. Objections to an assessment or reassessment concerning financial expenditures are resolved at the local level. In both situations, resolution of the Notice of Objection or Appeal remains the responsibility of the local Appeals Officer who informs the taxpayer in writing of the outcome. Where the disposition of the appeal is a Notice of Confirmation or a Notice of Assessment, the taxpayer has 90 days to appeal the decision to the Tax Court of Canada.

SR&ED Forms and Administrative Guidelines

In order to access the tax incentives for SR&ED in Canada, taxpayers are required to submit, along with their income tax return, complete and current versions of up to four prescribed forms: forms T661, T2038, T1145 and T1146. Expenditures for SR&ED conducted outside Canada are claimed with other business expenditures on the T2 Corporation Income Tax Return.

Revenue Canada has issued a number of administrative guidelines to assist taxpayers in filling out the prescribed forms and in determining eligible SR&ED. These include: the Guide to Form T661, various Information Circulars and Interpretation Bulletins, and a series of Application Policies and Directives from Head Office.

1) Forms T661, T2038, T1145 and T1146

Prescribed Form T661, *Claim for Scientific Research and Experimental Development (SR&ED) Expenditures Carried on in Canada*, is used to provide information on eligible SR&ED, certain payments to contractors and third parties, and certain financial information necessary for the administration of the SR&ED tax incentives. It is also used to calculate eligible expenditures for purposes of both the deduction and the investment tax credits as well as the amount of the SR&ED tax deduction available and claimed in a taxation year. Revenue Canada issues a guide to explain how to complete Form T661.[21] Form T661 must be filed within 18 months of the end of the taxation year in which the expenditures are incurred in order for a taxpayer to claim the expenditures as being in respect of SR&ED in Canada. Non-profit SR&ED corporations resident in Canada must also file Form T661 with their annual return to report their SR&ED work and expenditures.

Prescribed Form T2038 (CORP), *Investment Tax Credit – Corporations*, and prescribed Form T2038 (IND), *Investment Tax Credit (Individuals)*, are used to calculate the SR&ED tax credit or refund for a taxation year. As is the case for Form T661, these T2038 forms must be filed within 18 months after the end of the taxation year in which the expenditures are incurred in order for a taxpayer to claim the expenditures for SR&ED in Canada.

Prescribed Form T1145, *Agreement to Allocate Assistance for Scientific Research and Experimental Development (SR&ED) Expenditures Between Persons Not Dealing at Arm's Length*, is used to transfer amounts in respect of government assistance, non-government assistance and contract payments from a taxpayer to a non-arm's length person performing SR&ED on behalf of the taxpayer. In general, Form T1145 must be filed within six months of the end of the taxation year to which the agreement relates.

Prescribed Form T1146, *Agreement to Transfer Qualified Expenditures Incurred in Respect of Scientific Research and Experimental Development (SR&ED) Contracts*, is used to transfer to a taxpayer qualified expenditures incurred by a person with whom the taxpayer does not deal at arm's length in respect of SR&ED performed under contract for the taxpayer. In general, Form T1146 must be filed within six months of the end of the taxation year to which the agreement relates.

2) Information Circulars and Interpretation Bulletins

The purpose of Information Circular 86-4, *Scientific Research and Experimental Development*, is to clarify what constitutes SR&ED under the Income Tax Regulations. The circular examines only the technical issues involved in characterizing eligible SR&ED work. Judgements on technical matters require the opinions of scientists, engineers and other technical experts.

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[21] Information for Businesses that Conduct SR&ED in Canada: Claiming Scientific Research and Experimental Development Expenditures, Guide to Form T661.

Revenue Canada has also issued a number of additional Information Circulars in order to assist taxpayers and Revenue Canada staff interpret how Information Circular 86-4 applies to specific industry sectors. These sector-specific information circulars provide supplementary guidelines related to SR&ED and extend the guidelines contained in the main Information Circular 86-4. They include:

- Information Circular 86-4R2SUP1, *Scientific Research and Experimental Development: Automotive Industry Application Paper*, June 28, 1991;

- Information Circular 86-4R2SUP2, *Scientific Research and Experimental Development: Aerospace Industry Application Paper*, April 10, 1992;

- Information Circular 94-1, *Scientific Research and Experimental Development: Plastics Industry Application Paper*, February 4, 1994; and

- Information Circular 94-2, *SR&ED: Machinery and Equipment Industry Application Paper*, June 24, 1994.

In addition, Revenue Canada has issued Information Circular 97-1, *Scientific Research and Experimental Development: Administrative Guidelines for Software Development* to assist taxpayers and Revenue Canada staff in interpreting how the SR&ED tax incentives apply to software development. These software guidelines provide interpretation of the definition of SR&ED in income tax legislation and expand on the guidelines contained in Information Circular 86-4. The software guidelines are directed towards software specialists involved in the management of SR&ED who are responsible for providing technical descriptions to Revenue Canada as part of claims for SR&ED expenditures.

Interpretation Bulletin 151, *Scientific Research and Experimental Development Expenditures*, explains how to identify expenditures qualifying for the SR&ED tax incentives as well as the incentives themselves – both the SR&ED tax deduction and the investment tax credits for SR&ED.

3) Application Policies and Directives

These guidelines address specific issues concerning the administration of the SR&ED tax incentives. Examples include retroactive claims for SR&ED, the definition of "contract payment", the eligibility of testing, late-filed proxy elections and incomplete SR&ED claims.

In addition, Application Policy SR&ED 96-03, *Claimants' Entitlements and Responsibilities* (February 19, 1996) sets out Revenue Canada's commitment to promptly reviewing claims for the SR&ED tax incentives and outlines a number of administrative policies that have been established to deliver these incentives to corporations in a timely manner. It is requested on Form T661 that corporations place this form on top of the T2 corporate tax return for the year so that the SR&ED claim can be quickly identified. Application Policy SR&ED 96-03 indicates that, in cases where a claim is made for a refundable SR&ED tax credit and that claim is not audited, administrative policy is to issue a refund cheque within 60 days of receiving a completed claim. In cases where the refundable claim is audited, the policy is to issue a refund cheque within 120 days of receiving a completed claim. For non-refundable claims, the policy is

to inform the corporation within 120 days of receiving a completed claim whether or not it will be accepted as filed or an audit will be conducted. If an audit is to be conducted, taxpayers are offered the choice of having it completed within one year.

Monitoring and Managing the SR&ED Tax Incentives

In addition to liaison among officers responsible for policy or administration relating to the SR&ED tax incentives, the Department of Finance and Revenue Canada have established a number of formal mechanisms to ensure that these incentives can be monitored and managed appropriately. These include the SR&ED Interdepartmental Working Group and Revenue Canada's Advisory Committee on Scientific Research and Experimental Development. These mechanisms are described in this section.

SR&ED Interdepartmental Working Group

Established in 1994, the SR&ED Interdepartmental Working Group provides a structured forum for identifying and discussing on a timely basis all SR&ED tax issues which affect the two departments, and for developing, recommending and implementing strategies and policies for addressing them. Subject areas include:

- ongoing and emerging issues in the determination of expenditure eligibility and the audit of expenditure claims;

- the quality and quantity of program statistics collected, maintained in data bases and disseminated by Revenue Canada;

- legislative changes being contemplated by the Department of Finance, and changes to prescribed forms, information circulars and policy papers being contemplated by Revenue Canada; and

- all other activities being undertaken by the departments in the area of SR&ED.

Meetings of the SR&ED Interdepartmental Working Group are held on a regular basis (every two or three months) and participants consist of senior representatives of the divisions or sections responsible for the SR&ED income tax incentives. Regular participants include senior representatives from:

- the Business Income Tax Division and the Tax Legislation Division of the Department of Finance; and

- the Specialized Compliance Enforcement Division of Revenue Canada.

Senior representatives from other groups within Revenue Canada participate by invitation depending on the agenda items for a particular meeting.

Revenue Canada Advisory Committee

The Advisory Committee on Scientific Research and Experimental Development provides a means for Revenue Canada to gather input and feedback from industry, industry associations, consultants and other federal departments, including the Department of Finance, primarily on the administration of the tax incentives, but also on tax policy. Meetings are held on an ad hoc basis and generally average about two per year.

Other Linkages

There is a routine transfer of SR&ED tax information from the Statistical Services Division of Revenue Canada, which is responsible for compiling and maintaining the SR&ED data, to the Department of Finance. Data from the T661 and T2038 forms for each corporation claiming the SR&ED tax incentives are updated quarterly and are combined, on an annual basis, with other tax and financial information reported on each corporation's income tax return (Form T2). The Statistical Services Division also responds to requests for additional information on the SR&ED tax incentives on an ad hoc basis as needs arise.

Senior officials of the Tax Policy Branch of the Department of Finance and relevant branches of Revenue Canada meet on a monthly basis to review issues of mutual concern. To the extent that they arise, issues relating to the SR&ED tax incentives may be tabled at these meetings.

Chapter III
SR&ED EXPENDITURES AND TAX SUPPORT

This chapter addresses certain aspects of the central evaluation question on the impacts and effects of the SR&ED tax incentives, and complements other information on this question, obtained from surveys and literature reviews, provided in the next chapter. Specifically, this chapter reports amounts of SR&ED expenditures, deductions and tax credits claimed and refunded, in respect of SR&ED in Canada, by all corporations and by corporations eligible for the enhanced rate of federal tax credit (i.e. smaller CCPCs[22]) for the years 1988 through 1992.[23] Amounts of tax credits claimed by all corporations and smaller CCPCs are also identified by, for example, size of claim, region, industry sector, taxpaying status and non-resident ownership. Profiles for unincorporated businesses that claimed SR&ED tax credits were developed using data for 1990 to 1992 on, for example, their total and taxable income, their age and the region in which they reside.

Information on incorporated businesses was obtained from two data bases maintained by Revenue Canada: one containing data from the T661 and T2038 forms; the other which links this data with other tax and financial information reported on each corporation's income tax return (Form T2).[24] Information on unincorporated businesses was obtained from a Revenue Canada data base containing data from individual income tax returns (Form T1).[25]

SR&ED Expenditures and Deductions

Current expenditures that are eligible for the SR&ED tax incentives take the form of wages and salaries in respect of SR&ED, contract and third-party payments for SR&ED, costs of materials consumed in SR&ED, and lease costs of premises, facilities or equipment used for SR&ED. Eligible capital expenditures consist primarily of the costs of machinery and equipment that is all or substantially all used or consumed in performing SR&ED in Canada; the costs of certain highly specialized buildings used for SR&ED also qualify. The sum of eligible current and capital expenditures is referred to as "allowable expenditures". Allowable expenditures are adjusted in a number of ways to obtain expenditures that are eligible for the SR&ED tax deduction and the SR&ED tax credits.

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22 Smaller CCPCs refer to Canadian-controlled private corporations with prior-year taxable income under $400,000 and prior-year taxable capital employed in Canada under $15 million.

23 1992 was the most recent year for which relatively complete income tax data for corporations were available at the time of the evaluation work.

24 Corporate information reported in this chapter was drawn from an October 1996 update of these data bases.

25 Information reported in this chapter on unincorporated businesses was drawn from a January 1994 update of this data base.

In the case of the SR&ED tax deduction, allowable expenditures are reduced by: government and non-government assistance receivable in the year; SR&ED tax credits used in previous years; and revenues from any sales of SR&ED capital assets. These expenditures are increased by any repayments in the year of government and non-government assistance.

In the case of the SR&ED tax credits, allowable expenditures are reduced by: government and non-government assistance receivable in the year; contract payments received by the taxpayer; and certain other expenditures that are eligible for the SR&ED tax deduction (for example, interest costs, legal and accounting fees, and advertising or selling expenses). These expenditures are increased by any repayments in the year in respect of both government and non-government assistance and contract payments received.[26] Expenditures eligible for the SR&ED tax credits are referred to as "qualified expenditures".

Allowable Expenditures

Table 3.1a provides information on allowable expenditures incurred by all corporations on SR&ED in Canada from 1988 to 1992; Table 3.1b provides similar information for smaller CCPCs.

Allowable expenditures incurred by all corporations increased by 50 per cent between 1988 and 1992 from $4.5 billion in 1988 to $6.9 billion in 1992. At about 44 per cent, the share of wages and salaries in allowable expenditures remained relatively constant over the period. In contrast, the share of contract and third-party payments increased from 18 per cent to 24 per cent and offset decreases in the shares of capital expenses (from 10 per cent to 6 per cent) and other current expenses (from 29 per cent to 26 per cent).

Allowable expenditures incurred by smaller CCPCs doubled over the period 1988 to 1992 from $0.7 billion to $1.4 billion. This resulted in the share of allowable expenditures incurred by smaller CCPCs increasing from 15 per cent in 1988 to 20 per cent in 1992. At about 47 per cent, the share of wages and salaries in allowable expenditures incurred by smaller CCPCs was similar to the average over the five-year period for all corporations. However, the share of contract and third-party payments made by smaller CCPCs increased between 1988 and 1992 (i.e. from 12 per cent to 26 per cent) by substantially more than the share for all corporations while the share of other current expenditures decreased (i.e. from 34 per cent to 24 per cent) by more than the corresponding share for all corporations. The share of capital expenditures incurred by smaller CCPCs decreased (i.e. from 11 per cent to 7 per cent) in a similar manner to the share for all corporations. Taken together, these statistics suggest that smaller CCPCs became more heavily involved in SR&ED between 1988 and 1992 and that this involvement took the form, in large part, of contracting with other taxpayers to have SR&ED undertaken on their behalf.

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[26] After 1992, other additions to allowable expenditures include the amount of expenditures calculated using the prescribed proxy method for overhead costs and expenditures in respect of shared-use equipment.

Table 3.1a
SR&ED Current and Capital Expenditures, Corporations: 1988-1992
(percentage of allowable expenses)

	Wages & Salaries	Contract & Third-Party Payments*	Other Current Expenses**	Total Current Expenses	Total Capital Expenses***	**Allowable Expenses ($ million)**
1988	43.2	17.8	28.7	89.7	10.3	**4,544**
1989	45.1	18.2	27.9	91.2	8.8	**4,809**
1990	43.5	19.0	29.4	91.9	8.1	**5,688**
1991	42.9	22.7	26.0	91.6	8.4	**6,336**
1992	44.3	23.5	26.1	94.0	6.0	**6,889**

* In 1992, contract payments accounted for 43% of total contract and third-party payments.
** Materials consumed in the performance of SR&ED and lease costs of premises, facilities or equipment for SR&ED.
*** In 1992, expenses for special purpose buildings accounted for 3% of total capital expenses.

Source: Revenue Canada.

Table 3.1b
SR&ED Current and Capital Expenditures, Smaller CCPCs: 1988-1992
(percentage of allowable expenses)

	Wages & Salaries	Contract & Third-Party Payments	Other Current Expenses*	Total Current Expenses	Total Capital Expenses	**Allowable Expenses ($ million)**
1988	43.2	12.2	33.7	89.0	11.0	**695**
1989	48.6	11.8	30.4	90.8	9.2	**841**
1990	50.2	12.3	28.8	91.3	8.7	**970**
1991	47.5	18.9	26.3	92.7	7.3	**1,210**
1992	43.7	26.1	23.8	93.5	6.5	**1,398**

* Materials consumed in the performance of SR&ED and lease costs of premises, facilities or equipment for SR&ED.

Source: Revenue Canada.

Expenditures Eligible for Deduction and Amounts Deducted

This section provides information on: the relationship between allowable expenditures and expenditures eligible for the SR&ED tax deduction; and amounts of the SR&ED tax deduction claimed. The difference between expenditures eligible for deduction and amounts deducted in a year may be carried forward for use in other taxation years. Table 3.2a provides data for all corporations from 1988 to 1992; Table 3.2b, for smaller CCPCs.

Table 3.2a reveals that, for all corporations, expenditures eligible for deduction increased each year over the period 1988 to 1992, in line with the annual increases in allowable expenditures, and averaged about 88 per cent of allowable expenditures. However, this share decreased from 93 per cent in 1988 to 85 per cent in 1992, reflecting increases in the shares of both previous year's SR&ED tax credits claimed (from 1 per cent to 8 per cent) and government and non-government assistance receivable (from 3 per cent to 6 per cent). These share trends suggest that the importance of SR&ED tax credits for these firms has increased relative to:

- other types of non-tax assistance for SR&ED; and
- since the tax credits reduce expenditures eligible for deduction, the SR&ED tax deduction.

Amounts deducted by all corporations also increased each year over the period while amounts available to be carried over for use in other taxation years decreased.

As shown in Table 3.2b, expenditures eligible for deduction by smaller CCPCs also increased each year over the period 1988 to 1992 and averaged about 77 per cent of allowable expenditures. As well, this share decreased between 1988 and 1992, but by more than the corresponding decrease for all corporations. The same general findings relating to the shares of expenditures eligible for deduction, SR&ED tax credits and government and non-government assistance for all corporations also hold for smaller CCPCs, but the importance of the latter two forms of assistance, in terms of allowable expenditures, is relatively greater for smaller CCPCs. Specifically, the share of SR&ED tax credits in allowable expenditures for smaller CCPCs increased from 2 per cent in 1988 to 13 per cent in 1992; the share of government and non-government assistance increased from 5 per cent to 13 per cent; and the share of expenditures eligible for deduction decreased from 83 per cent to 71 per cent. Amounts deducted by smaller CCPCs increased between 1988 and 1991 while amounts available to be carried over for use in other taxation years generally decreased over the same period.

Table 3.2a
SR&ED Tax Deduction, Corporations: 1988-1992
(percentage of allowable expenses)

	Allowable Expenses ($ million)	Government & Non-Government Assistance	Previous Year's SR&ED Tax Credit Used	Other Adjustments*	Expenses Eligible for Deduction	Deduction Claimed
1988	**4,544**	2.8	1.5	2.9	92.8	58.6
1989	**4,809**	4.1	1.3	4.5	90.2	66.8
1990	**5,688**	2.5	2.1	6.9	88.5	71.5
1991	**6,336**	3.0	3.3	6.4	87.3	75.4
1992	**6,889**	6.4	7.9	0.6	85.1	76.8

* Sale of SR&ED capital assets and repayments of government and non-government assistance.

Source: Revenue Canada.

Table 3.2b
SR&ED Tax Deduction, Smaller CCPCs: 1988-1992
(percentage of allowable expenses)

	Allowable Expenses ($ million)	Government & Non-Government Assistance	Previous Year's SR&ED Tax Credit Used	Other Adjustments*	Expenses Eligible for Deduction	Deduction Claimed
1988	**695**	4.6	2.0	10.1	83.3	54.8
1989	**841**	4.8	3.3	11.8	80.1	58.4
1990	**970**	5.4	3.8	12.8	78.0	58.9
1991	**1,210**	5.3	5.2	13.2	76.3	64.2
1992	**1,398**	12.9	13.2	2.7	71.2	54.4

* Sale of SR&ED capital assets and repayments of government and non-government assistance.

Source: Revenue Canada.

Qualified Expenditures

This section provides information on the relationship between allowable expenditures and expenditures eligible for the SR&ED tax credits – also known as qualified expenditures. Table 3.3a provides data for all corporations from 1988 to 1992; Table 3.3b, for smaller CCPCs.

Table 3.3a reveals that qualified expenditures for all corporations were relatively constant as a share of allowable expenditures, and averaged 81 per cent, over the period 1988 to 1992. The absolute level of qualified expenditures increased each year in line with the annual increases in allowable expenditures. Government and non-government assistance and contract payments received as a share of allowable expenditures increased from 15 per cent in 1988 to 19 per cent in 1992 and averaged about 18 per cent over the period. The average level of qualified expenditures for all corporations fell from about $745,000 in 1988 to about $635,000 in 1992.

As shown in Table 3.3b, qualified expenditures for smaller CCPCs also increased each year over the period 1988 to 1992 and equalled about 85 per cent of allowable expenditures in each year. The share of government and non-government assistance in allowable expenditures increased from 11 per cent in 1988 to 16 per cent in 1992 and averaged about 13 per cent over the period. The average level of qualified expenditures for smaller CCPCs remained fairly constant at about $178,000 in each of the five years.

SR&ED Tax Credits

Incorporated Businesses

Table 3.4a provides annual data on the value and number of corporate claims for SR&ED tax credits for each of the three rates of tax credit applicable between 1988 and 1992.[27] It reveals:

- the value of claims made by all corporations increased by 58 per cent from $793.5 million in 1988 to $1.25 billion in 1992, and averaged almost $1 billion per year over the period; and

- the number of these claims rose by 75 per cent from 4,992 in 1988 to 8,725 in 1992.

The table also shows that claims for SR&ED tax credits at the 20 per cent general rate ranged between 71 per cent and 77 per cent of the value of all claims from 1988 to 1992, but the corporations claiming these credits accounted for only 23 per cent to 31 per cent of all tax credit claimants. Furthermore, while claims for tax credits at the 35 per cent enhanced rate ranged from a more modest 22 per cent to 27 per cent of the value of all claims over the period, the smaller CCPCs claiming these credits accounted for between 67 per cent to 75 per cent of all tax credit claimants. Claims at the 30 per cent rate for the Atlantic region consistently accounted for between only 1 per cent and 2 per cent of the annual value and number of claims.

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[27] The 30 per cent rate of tax credit for SR&ED in the Atlantic provinces and the Gaspé region was eliminated for expenditures made after 1994.

Table 3.3a
SR&ED Qualified Expenditures, Corporations: 1988-1992
(percentage of allowable expenses)

	Allowable Expenses ($ million)	Government and Non-Government Assistance, and Contract Payments Received	Other Adjustments*	Qualified Expenditures
1988	**4,544**	15.5	2.7	81.8
1989	**4,809**	16.8	1.1	82.2
1990	**5,688**	18.1	2.1	79.8
1991	**6,336**	19.6	1.3	79.1
1992	**6,889**	19.2	0.3	80.5

* For 1988-92, these are primarily interest costs, legal and accounting fees, advertising or selling expenses and other non-qualified expenditures.

Source: Revenue Canada.

Table 3.3b
SR&ED Qualified Expenditures, Smaller CCPCs: 1988-1992
(percentage of allowable expenses)

	Allowable Expenses ($ million)	Government and Non-Government Assistance, and Contract Payments Received	Other Adjustments*	Qualified Expenditures
1988	**695**	10.6	2.2	87.2
1989	**841**	13.1	1.3	85.6
1990	**970**	12.9	1.8	85.4
1991	**1,210**	12.9	1.7	85.4
1992	**1,398**	15.6	-0.2	84.6

* For 1988-92, these are primarily interest costs, legal and accounting fees, advertising or selling expenses and other non-qualified expenditures.

Source: Revenue Canada.

Table 3.4a
SR&ED Tax Credits, Corporations: 1988-1992 (Percentage of All Claims)

	Claims at 20% Rate		Claims at 35% Rate		Claims at 30% Rate		**All Claims**	
	Value Share	Claimant Share	Value Share	Claimant Share	Value Share	Claimant Share	**Value ($ million)**	**Number**
1988	77	31	22	67	1	2	**793.5**	**4,992**
1989	73	29	25	70	2	2	**814.9**	**5,458**
1990	73	26	26	72	2	2	**1,003.0**	**6,973**
1991	71	23	27	75	2	1	**1,118.1**	**8,146**
1992	71	24	27	75	1	1	**1,249.9**	**8,725**

Source: Revenue Canada.

Table 3.4b
SR&ED Tax Credits, Smaller CCPCs: 1988-1992 (Percentage of All Claims)

	Claims at 20% Rate		Claims at 35% Rate		Claims at 30% Rate		**All Claims**	
	Value Share	Claimant Share	Value Share	Claimant Share	Value Share	Claimant Share	**Value ($ million)**	**Number**
1988	9	2	91	98	0	0	**191.5**	**3,412**
1989	10	2	90	98	0	0	**223.7**	**3,868**
1990	5	1	95	98	0	0	**271.0**	**5,120**
1991	9	1	91	99	0	0	**334.6**	**6,205**
1992	10	1	90	98	0	0	**378.1**	**6,632**

Source: Revenue Canada.

Table 3.4b provides similar information for smaller CCPCs. It reveals that:

- the value of claims made by smaller CCPCs increased by 97 per cent from $191.5 million in 1988 to $378.1 million in 1992, and averaged about $280 million per year over the period; and

- the number of these claims rose by 94 per cent from 3,412 in 1988 to 6,632 in 1992.

These data also indicate that the average annual value of claims for tax credits for smaller CCPCs remained relatively constant over the period at about $55,000. The number of other corporations claiming the tax credits also increased between 1988 and 1992, but by a smaller amount, so that the average amount of SR&ED tax credits claimed by all corporations fell by 10 per cent between 1988 and 1992 to about $145,000.

Table 3.4b also shows that about 90 per cent of the value, and 98 per cent of the number, of claims made by smaller CCPCs were for SR&ED tax credits at the 35 per cent rate of tax credit – claims made at the 20 per cent rate comprised the remainder. A comparison of Tables 3.4a and 3.4b shows that almost all claims made by larger corporations were at the 20 per cent rate of SR&ED tax credit with only small shares (generally under 3 per cent) reported for the 30 per cent rate.[28] Furthermore, the comparison reveals that, between 1988 and 1992, smaller CCPCs increased their share of:

- the value of all corporate claims for SR&ED tax credits from 24 per cent to 30 per cent; and

- the number of all corporate claims for SR&ED tax credits from 68 per cent to 76 per cent.

1) Refunds

Table 3.5 reports amounts of tax credits refunded to smaller CCPCs at both the 40 per cent and 100 per cent rates of refund between 1988 and 1992. It shows that both the value and number of refunds doubled over the period. Furthermore, refunds of current expenditures at the 100 per cent rate accounted for the vast majority (over 90 per cent) of the amounts refunded each year.

In terms of the amounts reported in Table 3.4b, about 80 per cent of SR&ED tax credits earned by smaller CCPCs were refunded to them. This share remained fairly constant over the period 1988 to 1992. In addition, in each of these years, between 80 per cent and 86 per cent of these smaller CCPCs received a refund of SR&ED tax credits earned by them. These refunds averaged about $53,000.

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[28] Larger corporations are not eligible for the 35 per cent rate of SR&ED tax credit.

Table 3.5
SR&ED Tax Credit Refunds, Smaller CCPCs: 1988-1992
(Percentage of All Claims)

	Refunds at 40% Rate		Refunds at 100% Rate		All Refunds		
	Value Share	Claimant Share	Value Share	Claimant Share	Value Share	Value ($ million)	Number
1988	12	34	88	66	100	154.3	2,831
1989	10	30	90	70	100	177.5	3,217
1990	7	24	93	76	100	215.7	4,086
1991	9	23	91	77	100	260.3	5,240
1992	8	23	92	77	100	304.5	5,715

Source: Revenue Canada.

2) Distribution by Size of Claim

This section examines the distribution of corporate claims for SR&ED tax credits by the size of tax credit claimed. Both the value and number of claims for SR&ED tax credits are considered. The data for all corporations indicate that these distributions are the same for each year from 1988 to 1992. These patterns are illustrated in Figure 3.1 using 1992 data on the value and number of claims by size of claim. Claim-size intervals range from under $5,000 to over $10 million. At the one extreme, the average value of claims for SR&ED tax credits within the "under $5,000" interval is about $2,500 each year over the period; at the other, the average value of claims within the "over $10 million" interval is between $32 million and $38 million.

Figure 3.1 reveals that the share of the value of claims for SR&ED tax credits for a particular claim-size interval rises fairly steadily as claim size increases.[29] In particular, this share:

- peaks at about 20 per cent for tax credit claims of between $1 million to $5 million; and
- at 33 per cent, is highest for claims exceeding $10 million in value.

Conversely, the share of claimants:

- peaks at 38 per cent for claims of between $5,000 to $25,000; and
- then steadily declines as claim size increases.

[29] There are only a very small number of claimants in the larger claim-size intervals.

Almost 20 per cent of the number of claims over the period 1988 to 1992 were in respect of allowable expenditures of less than $20,000. These claims accounted for only 0.4 per cent of the value of SR&ED tax credits claimed in each year. Collectively, 71 per cent of claimants filed claims for under $50,000 of SR&ED tax credits; these claims accounted for only 8 per cent of the value of claims for SR&ED tax credits in each year from 1988 to 1992. In contrast, the top 300 claimants in terms of claim size (for 1992, those with claims in excess of $520,000 each) accounted for only 3 per cent of claimants, but 67 per cent of the value of all claims.[30] The average claim size of the top 300 claimants increased from about $1.9 million in 1988 to $2.8 million in 1992. A total of 222 corporations which claimed tax credits each year between 1988 and 1992 were also in the top 300 category for at least one of these five years. However, only 72 corporations were consistently among the top 300 firms in each of the five years.

In each year from 1988 to 1992, smaller CCPCs accounted for about 80 per cent of both the value and number of claims by all corporations in claim-size intervals under $50,000. These shares, which follow an almost identical pattern across claim-size intervals, then tended to fall steadily as claim size increased. In 1991 and 1992, the shares fell to about:

- 75 per cent in the $50,000 to $100,000 claim-size interval;
- 65 per cent in the $100,000 to $250,000 claim-size interval;
- 50 per cent in the $250,000 to $1 million claim-size interval;
- 15 per cent in the $1 million to $5 million claim-size interval; and
- continued to fall over the remaining claim-size intervals.

It is noteworthy that smaller CCPCs are included in almost all of the claim-size intervals in each year over the period 1988 to 1992 – depending on the year, only larger claim-size intervals may not contain claims made by these corporations. Smaller CCPCs also consistently comprised about one-third of the top 300 claimants in each year over the period. Furthermore, of the 1,858 corporations that claimed SR&ED tax credits continuously in each of the five years from 1988 to 1992[31], 56 per cent were continuously smaller CCPCs, 8 per cent were initially smaller CCPCs that became ineligible for the enhanced rate of tax credit after 1988, and 24 per cent were continuously corporations eligible for only the general rate of tax credit.

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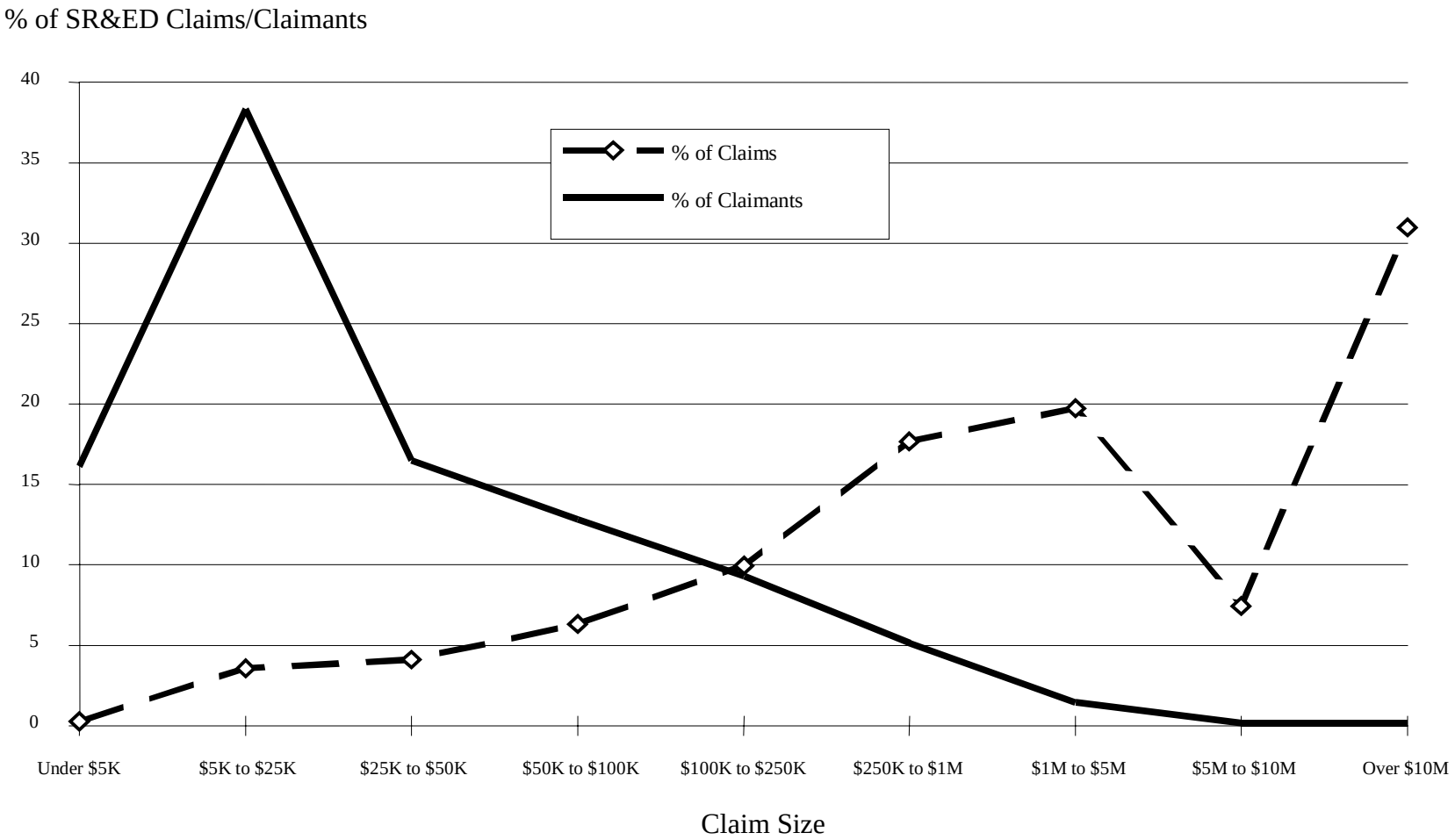
30 In 1988, the top 300 claimants (those with claims in excess of $320,000 each) accounted for 74 per cent of the value of all claims.

31 A total of 13,981 corporations made at least one claim for SR&ED tax credits over the period 1988 to 1992.

Figure 3.1
Distribution of SR&ED Tax Credits by Claim Size, Corporations: 1992



Source: Revenue Canada.

3) Regional Distribution

Tables 3.6a and 3.6b provide a regional breakdown of SR&ED tax credit claims from 1988 to 1992 for all corporations and for smaller CCPCs, respectively.[32] Two trends are apparent.

First, regardless of firm type, corporations with head offices in Ontario and Quebec dominated in terms of both the value and number of claims over the period. Taken together, these shares also remained fairly constant over the period: at 82 per cent of the value, and 68 per cent of the number, of all corporate claims; and at 69 per cent of the value, and 65 per cent of the number, of all claims made by smaller CCPCs. Furthermore, the value share for all corporations exceeded the share of claimants for each of these provinces in each year. For smaller CCPCs, the value share exceeded the share of claimants in Ontario in each year, but the reverse relationship held in Quebec. The next largest regions were British Columbia[33] and Alberta, respectively, in terms of the value and number of SR&ED tax credit claims reported. There were about 67 per cent more claimants in B.C. than in Alberta regardless of firm type, but the value of claims was about the same in the two provinces for all corporations and 60 per cent higher in British Columbia for smaller CCPCs. The remaining regions each accounted for between 0 per cent and 2 per cent of the value of SR&ED claims and 2 per cent to 4 per cent of claimants.

Second, both the value and number of claims increased in every region over the period. For the country as a whole, the value of claims for all corporations increased by 58 per cent between 1988 and 1992; the value of claims for smaller CCPCs, by 97 per cent. The number of claims for all corporations increased by 75 per cent between 1988 and 1992; the number of claims for smaller CCPCs, by 94 per cent.

- For all corporations, only Ontario (44 per cent) and Alberta (52 per cent) had growth in claim value that was less than the national average over this period. Growth in the number of claims was less than the national average in Atlantic Canada (74 per cent), Alberta (64 per cent), and Ontario and British Columbia (58 per cent each). Quebec's growth in claim value (63 per cent) and claimants (110 per cent) between 1988 and 1992 exactly offset Ontario's relatively poorer performance by national standards to maintain the overall dominance of the two provinces.

- For smaller CCPCs, only Manitoba and Quebec had growth in claim value (256 per cent and 214 per cent, respectively) and in the number of claims (122 per cent and 141 per cent, respectively) that was more than the national average.

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32 Specifically, by the region in which the corporate head office is located. This does not necessarily correspond to the region in which the SR&ED work is undertaken.

33 SR&ED tax credit claims for firms with head offices in the Northwest Territories and the Yukon are combined with the results for British Columbia in Tables 3.6a and 3.6b.

Table 3.6a
SR&ED Tax Credits by Region, Corporations: 1988-1992*
(percentage of all claims)

Region	1988	1989	1990	1991	1992
Atlantic Canada					
Value Share	1.9	1.8	1.7	1.9	1.9
Claimant Share	3.7	3.6	3.2	3.7	3.7
Quebec					
Value Share	40.5	36.3	40.8	43.6	41.9
Claimant Share	26.2	27.5	30.1	30.7	31.5
Ontario					
Value Share	43.2	43.8	39.8	38.8	39.5
Claimant Share	40.3	40.3	38.2	37.1	36.6
Manitoba					
Value Share	0.6	0.7	1.0	1.3	1.3
Claimant Share	2.1	2.3	2.5	2.6	2.5
Saskatchewan					
Value Share	0.7	0.9	0.9	0.8	1.1
Claimant Share	1.9	2.1	2.1	2.0	2.1
Alberta					
Value Share	6.4	8.5	8.5	6.4	6.2
Claimant Share	9.5	9.0	9.3	8.8	8.9
B.C., Yukon & N.W.T					
Value Share	6.8	7.9	7.4	7.2	8.1
Claimant Share	16.3	15.2	14.7	15.1	14.8
All Regions					
Share	100.0	100.0	100.0	100.0	100.0
Value ($ million)	793.5	814.9	1,003.0	1,118.1	1,249.9
Claimants	4,992	5,458	6,973	8,146	8,725

* Specifically, reporting is based on the region in which the corporate head office is located.

Source: Revenue Canada.

Table 3.6b
SR&ED Tax Credits by Region, Smaller CCPCs: 1988-1992
(percentage of all claims)

Region	1988	1989	1990	1991	1992
Atlantic Canada					
Value Share	3.2	2.3	1.9	2.1	1.9
Claimant Share	4.1	3.6	3.2	3.9	3.7
Quebec					
Value Share	17.3	19.1	19.1	22.5	27.5
Claimant Share	24.4	26.0	28.7	29.3	30.2
Ontario					
Value Share	47.4	48.5	48.4	47.2	43.5
Claimant Share	37.5	38.7	37.0	35.9	35.6
Manitoba					
Value Share	1.4	1.6	1.7	2.3	2.5
Claimant Share	2.3	2.2	2.4	2.5	2.6
Saskatchewan					
Value Share	2.3	2.2	2.2	1.8	2.2
Claimant Share	2.4	2.6	2.4	2.3	2.3
Alberta					
Value Share	13.3	12.8	11.4	10.0	8.6
Claimant Share	10.8	10.1	10.3	9.5	9.5
B.C., Yukon & N.W.T					
Value Share	15.2	13.6	15.3	14.1	13.8
Claimant Share	18.6	16.8	16.2	16.6	16.0
All Regions					
Share	100.0	100.0	100.0	100.0	100.0
Value ($ million)	191.5	223.7	271.0	334.6	378.1
Claimants	3,412	3,868	5,120	6,205	6,632

* Specifically, reporting is based on the region in which the corporate head office is located.

Source: Revenue Canada.

4) Sectoral Distribution

Tables 3.7a and 3.7b provide a sectoral breakdown of the value and number of claims for SR&ED tax credits for all corporations and smaller CCPCs, respectively.

Table 3.7a shows that, between 1989 and 1992, about 90 per cent of corporate SR&ED tax credit claims were made by firms in five sectors: manufacturing, services, wholesale trade, communication, and finance and real estate. Furthermore, the level of claims in each of the five sectors increased each year over the period. Manufacturing firms accounted for about half of all tax credit claims, but this share declined over the period from 54.8 per cent in 1989 to 47.6 per cent in 1992. Firms in the services sector accounted for about 18 per cent of claims over the period; firms in wholesale trade, 9 per cent; communication firms, 8 per cent; and firms in finance and real estate, 4 per cent. The latter two sectors also increased significantly their share of tax credit claims over the period: the communication sector, by 4.3 percentage points to 9.6 per cent in 1992; the finance and real estate sector, by 3.1 percentage points to 5.7 per cent in 1992. Firms in manufacturing accounted for 39 per cent of all corporate claimants over the period; firms in the services sector, 32 per cent; and firms in wholesale trade, 12 per cent. The share of claimants in all other sectors was less than 5 per cent. Other than for the services sector, which recorded a decline in the share of corporate claimants over the period, the share of claimants in other sectors either remained constant or increased marginally. As was the case for the value of corporate tax credit claims, the number of corporate claimants also tended to increase each year in each sector.

Table 3.7b provides similar information for smaller CCPCs. It shows that almost 90 per cent of their SR&ED tax credits claims between 1989 and 1992 were attributable to three sectors: services, manufacturing and wholesale trade. Smaller CCPCs in the services sector accounted for about 45 per cent of these tax credit claims; in manufacturing, about 31 per cent; and in wholesale trade, about 10 per cent. The share of claims in the services and manufacturing sectors remained fairly constant over the period while the share in wholesale trade increased slightly. The services sector accounted for about 38 per cent of smaller CCPCs that claimed tax credits over the period; manufacturing, 33 per cent; and wholesale trade, 12 per cent. The share of smaller CCPCs in all other sectors was less than 6 per cent. Other than for the services sector, which recorded a decline in its share of smaller CCPCs over the period, the share in most other sectors increased marginally. As was the case for the value of tax credit claims by smaller CCPCs, the number of smaller CCPCs also tended to increase each year in each sector.

Table 3.7a
SR&ED Tax Credits by Sector, Corporations: 1989-1992
(percentage of all claims)

Sector	Value of Claims				Number of Claims			
	1989	1990	1991	1992	1989	1990	1991	1992
Agriculture, Forestry & Fishing	0.6	0.7	0.8	1.0	1.9	2.3	2.5	2.5
Manufacturing	54.8	51.5	50.3	47.6	39.9	39.8	39.4	39.4
Construction	0.4	0.6	0.5	0.5	1.8	2.1	2.4	2.4
Transportation & Storage	0.4	0.8	0.6	0.5	0.5	0.6	0.6	0.7
Communication	5.3	7.0	9.1	9.6	0.5	0.5	0.6	0.7
Public Utilities	0.1	0.2	0.1	0.1	0.3	0.5	0.4	0.3
Wholesale Trade	9.5	9.4	9.2	9.1	10.7	11.8	12.5	12.4
Retail Trade	0.2	0.4	0.5	0.4	1.6	1.8	2.0	2.0
Finance & Real Estate	2.6	4.6	5.6	5.7	3.1	3.1	2.8	2.9
Services	17.6	16.7	17.2	19.0	34.1	31.6	30.9	30.2
Oil and Gas	5.1	4.9	2.5	2.7	1.2	1.1	0.8	0.9
Mining	2.1	2.1	2.2	2.1	0.8	0.6	0.6	0.6
Other	1.4	1.2	1.4	1.5	3.7	4.2	4.5	4.9
All Sectors								
Share	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Value ($ million)	814.9	1,003.0	1,118.1	1,249.9	--	--	--	--
Claimants	--	--	--	--	5,458	6,973	8,146	8,725

Source: Revenue Canada.

Table 3.7b
SR&ED Tax Credits by Sector, Smaller CCPCs: 1989-1992
(percentage of all claims)

Sector	Value of Claims				Number of Claims			
	1989	1990	1991	1992	1989	1990	1991	1992
Agriculture, Forestry & Fishing	1.4	1.6	1.7	1.6	2.1	2.4	2.6	2.6
Manufacturing	30.8	34.4	34.6	31.0	32.3	33.4	34.3	34.4
Construction	0.9	1.3	1.2	1.1	2.0	2.3	2.6	2.7
Transportation & Storage	0.3	0.3	0.5	0.7	0.4	0.3	0.4	0.5
Communication	2.2	0.9	0.5	0.4	0.2	0.3	0.3	0.4
Public Utilities	0.0	0.3	0.1	0.0	0.1	0.3	0.2	0.2
Wholesale Trade	8.0	9.7	9.4	10.4	11.3	12.6	13.2	13.0
Retail Trade	0.7	1.0	1.2	1.1	1.9	2.1	2.3	2.3
Finance & Real Estate	5.6	3.0	3.3	2.6	2.8	2.7	2.1	2.2
Services	46.9	43.6	43.2	46.5	41.6	37.6	36.0	35.3
Oil and Gas	0.6	0.7	0.4	0.5	0.6	0.7	0.4	0.5
Mining	0.2	0.4	0.2	0.2	0.4	0.4	0.3	0.3
Other	2.3	2.8	3.6	3.9	4.2	4.9	5.2	5.6
All Sectors								
Share	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Value ($ million)	223.7	271.0	334.6	378.1	--	--	--	--
Claimants	--	--	--	--	3,868	5,120	6,205	6,632

Source: Revenue Canada.

5) Other Information on Corporate Claimants

Profiles for corporations claiming SR&ED tax credits were further developed using taxation data from Revenue Canada's linked T661/T2038-CORPAC data base for the years 1989 to 1992. These data provide information on corporation type, net income per financial statements, taxable income, tax payable and non-resident ownership. Since the findings are almost identical for each of the four years, Tables 3.8 to 3.12 present information for 1992 only on the value and number of SR&ED tax credit claims by corporations.

Table 3.8 considers whether corporations claiming SR&ED tax credits were CCPCs (both smaller CCPCs eligible for the enhanced rate of tax credit and other CCPCs eligible only for the general rate), other private corporations, public corporations or other corporations. It shows that CCPCs comprise the vast majority (87 per cent in 1992) of corporate claimants, but only about one-third (36 per cent in 1992) of the value of claims. Public corporations, while accounting for only 3 per cent of corporate claimants, account for about the same amount of tax credits as CCPCs in terms of the value of claims.

Table 3.9 examines the net income per financial statements of corporate SR&ED claimants. It shows that the majority of claimants (52 per cent in 1992) have positive net income and that these claimants account for almost two-thirds (64 per cent in 1992) of the value of claims for SR&ED tax credits. Most of the remaining corporate claimants had net income less than zero.

Tables 3.10 and 3.11, which consider the taxable income and taxpaying status by corporate SR&ED claimants, reveal results similar to those in Table 3.9. The tables show that 52 per cent of the companies claiming SR&ED tax credits were non-taxpaying and that these non-taxpaying companies accounted for 38 per cent of the value of tax credits claimed. Smaller CCPCs that were non-taxpaying accounted for between 56 per cent and 60 per cent of both the value and number of claims made by smaller CCPCs for SR&ED tax credits over the period 1988 to 1992.

Table 3.12 investigates the degree of non-resident ownership of corporate SR&ED claimants. It shows that the vast majority (94 per cent in 1992) of these companies were controlled by Canadians (i.e. companies where non-resident ownership was less than 50 per cent) and that these Canadian companies accounted for 78 per cent of the value of claims for the SR&ED tax credits.

Table 3.8
SR&ED Tax Credits by Corporation Type: 1992 (%)

Corporation Type	Value of Claims	Number of Claims
CCPCs	36	87
Other Private Corporations	22	7
Public Corporations	34	3
Other Corporations	8	4
All Corporations *Share* *Level*	 100 $1.25 billion	 100 8,725

Source: Revenue Canada.

Table 3.9
SR&ED Tax Credits by Net Income Per Financial Statements, Corporations: 1992 (%)

Net Income Per Financial Statements	Value of Claims	Number of Claims
Less than zero	34	44
Zero	3	3
Greater than zero	64	52
All Corporations *Share* *Level*	 100 $1.25 billion	 100 8,725

Source: Revenue Canada.

Table 3.10
SR&ED Tax Credits by Taxable Income, Corporations: 1992 (%)

Taxable Income	Value of Claims	Number of Claims
Zero	34	51
Greater than zero	66	49
All Corporations *Share* *Level*	 100 $1.25 billion	 100 8,725

Source: Revenue Canada.

Table 3.11
SR&ED Tax Credits by Taxpaying Status, Corporations: 1992 (%)

Taxpaying Status	Value of Claims	Number of Claims
Non-Taxpaying	38	52
Taxpaying	62	48
All Corporations *Share* *Level*	 100 $1.25 billion	 100 8,725

Source: Revenue Canada.

Table 3.12
SR&ED Tax Credits by Non-Resident Ownership, Corporations: 1992 (%)

Non-Resident Ownership	Value of Claims	Number of Claims
Nil	54	91
Less than 50%	24	3
More than 50%	22	6
All Corporations *Share* *Level*	 100 $1.25 billion	 100 8,725

Source: Revenue Canada.

Unincorporated Businesses

Table 3.13 provides annual data on claims for SR&ED tax credits, at the 20 per cent and 30 per cent rates, by unincorporated businesses between 1990 and 1992. The table reveals that:

- the value of these claims averaged only $8.6 million per year over the period and decreased by 36 per cent from $10.6 million in 1990 to $6.7 million in 1992; and

- the number of unincorporated businesses claiming SR&ED tax credits also decreased by 36 per cent from 4,772 in 1990 to 3,051 in 1992.

Profiles for these unincorporated businesses were developed using taxation data from Revenue Canada's T1 Individual Tax Filer Model for the years 1990 to 1992. These profiles consider the total income, taxable income, age, gender and marital status, and region of the individuals performing SR&ED in a business context and claiming SR&ED tax credits. Since the findings are robust over each of the three years, Tables 3.14 to 3.18 present information for 1992 only on:

- the value and number of SR&ED tax credit claims by unincorporated businesses; and

- the value of SR&ED tax credit claims as a proportion of total income.

The latter serves as a proxy for the "aggressiveness" of SR&ED investors.

Table 3.14 considers the total income of unincorporated businesses claiming SR&ED tax credits. It indicates that individuals with total incomes of less than $100,000 accounted for 69 per cent of the value and 65 per cent of the number of SR&ED claims by unincorporated businesses. Furthermore, both SR&ED investment activity and the number of claims generally declined over the total income ranges. A weak inverse relationship is also apparent in this table between total income and the aggressiveness of these investors – individuals with smaller incomes generally invested a larger proportion of their total income in SR&ED.

Table 3.15 examines the taxable income of unincorporated businesses claiming SR&ED tax credits. The table shows that individuals in the highest and middle tax brackets accounted for 79 per cent of both the value and number of SR&ED claims by unincorporated businesses. A strong inverse relationship is also evident between taxable income and the aggressiveness of these investors – individuals with smaller taxable incomes invested a larger proportion of their total income in SR&ED.

Table 3.16 investigates the age of unincorporated business owners claiming SR&ED tax credits. It shows that SR&ED investment activity was low for individuals under 30 years of age; rose for individuals in their thirties; peaked for individuals in their forties; and declined over the remaining age groups. An inverse relationship is also evident between the age and aggressiveness of these investors – younger individuals invested a larger proportion of their total income in SR&ED.

Table 3.17 considers the gender and marital status of unincorporated business owners claiming SR&ED tax credits. It shows that males represented 84 per cent of these investors and accounted for 88 per cent of the value of their claims. Married males were also more actively involved in SR&ED while, for females, marital status was not significantly different among categories. The aggressiveness of these investors is not markedly different in terms of gender or marital status – the proportion of total income invested in SR&ED on these bases remains fairly close to the average for all unincorporated businesses.

Table 3.18 explores the location of SR&ED activities by unincorporated businesses. It shows that residents of Quebec accounted for about 70 per cent of both the value and number of SR&ED claims by these investors. This is followed by Ontario at about 20 per cent of claims and claimants. While the remaining provinces and territories each accounted for only 1 per cent to 4 per cent of both the value and number of SR&ED claims by unincorporated businesses, the aggressiveness of these investors was higher than for investors resident in Quebec or Ontario.

Based on the data in Tables 3.14 to 3.18, the "typical" individual performing SR&ED in a business context can be described as a married male in his thirties or forties who resides in Quebec, has an annual income of less than $100,000 and is in the top income tax bracket. However, the profile of aggressive unincorporated business owners, in terms of the proportion of their total income spent on SR&ED, is quite different. Such investors were more likely to be: under 30 years of age; residents of a province other than Quebec; and subject to the lowest income tax rates.

Table 3.13
SR&ED Tax Credits, Unincorporated Businesses: 1990-92

	Value of Claims ($ million)	Number of Claimants	Average Claim ($)
1990	10.6	4,772	2,215
1991	8.6	4,220	2,047
1992	6.7	3,051	2,205

Source: Revenue Canada.

Table 3.14
SR&ED Tax Credits by Total Income Range, Unincorporated Businesses: 1992 (%)

Income Range	Value of Claims	Number of Claims	Claim as % of Income
$0 to $50,000	39	36	8.6
$50,000 to $100,000	30	29	3.3
$100,000 to $150,000	11	18	1.1
$150,000 to $200,000	7	9	1.0
$200,000 to $250,000	5	4	1.1
over $250,000	9	4	1.3
All Incomes *Share* *Level*	 100 $6.7 million	 100 3,051	 100 2.4%

Source: Revenue Canada.

Table 3.15
SR&ED Tax Credits by Taxable Income Range, Unincorporated Businesses: 1992 (%)

Tax Bracket	Value of Claims	Number of Claims	Claim as % of Income
Not Taxable	2	1	not applicable
Lowest	19	20	9.9
Middle	37	32	4.8
Highest	42	47	1.3
All Tax Brackets			
Share	100	100	100
Level	$6.7 million	3,051	2.4%

Source: Revenue Canada.

Table 3.16
SR&ED Tax Credits by Age Group, Unincorporated Businesses: 1992 (%)

Age Group	Value of Claims	Number of Claims	Claim as % of Income
Under 30	4	4	4.1
30 to 39	33	34	2.6
40 to 49	37	35	2.6
50 to 59	19	18	2.2
60 plus	7	9	1.4
All Age Groups			
Share	100	100	100
Level	$6.7 million	3,051	2.4%

Source: Revenue Canada.

Table 3.17
SR&ED Tax Credits by Gender and Marital Status, Unincorporated Businesses: 1992 (%)

Gender & Marital Status	Value of Claims	Number of Claims	Claim as % of Income
Males	88	84	2.4
- Married	*78*	*78*	*2.3*
- Other	*22*	*22*	*2.9*
Females	12	16	2.5
- Married	*50*	*56*	*2.3*
- Other	*50*	*44*	*2.7*
All Individuals *Share* *Level*	 100 $6.7 million	 100 3,051	 100 2.4%

Source: Revenue Canada.

Table 3.18
SR&ED Tax Credits by Region, Unincorporated Businesses: 1992 (%)

Region	Value of Claims	Number of Claims	Claim as % of Income
Atlantic Canada	4	4	2.8
Quebec	69	70	2.4
Ontario	20	17	2.0
Manitoba	1	1	3.5
Saskatchewan	1	2	3.8
Alberta	1	3	3.1
British Columbia	3	2	5.5
All Regions *Share* *Level*	 100 $6.7 million	 100 3,051	 100 2.4%

Source: Revenue Canada.

Chapter IV
EVALUATION FINDINGS

This chapter:

- outlines the policy and administrative objectives underlying the SR&ED tax incentives;
- identifies the evaluation questions in relation to these federal objectives;
- presents the methodologies used to evaluate different aspects of the performance of the SR&ED tax incentives; and
- reports the findings of the evaluation in terms of the relevance, impacts and effects, cost-effectiveness and delivery of the SR&ED tax incentives in relation to their policy and administrative objectives.

Federal Objectives Underlying SR&ED Tax Support

Tax Policy

The policy principles underlying the current system of income tax incentives for SR&ED were first set out in a 1983 budget document and continue to remain in effect.[34] As stated in that document, these principles are:

> *The private sector is in the best position to determine the amount and type of industrial research and development that it should undertake. Any firm's research and development projects have to make business sense; the results need to be marketable, and the project should be profitable. Thus, the incentive structure for research and development should continue to contain general measures, such as*

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34 See Department of Finance (1983), pp. 1-2. These principles are also restated in Department of Finance (1996), p. 174. As stated in the latter document:

> *Federal tax policy objectives in supporting SR&ED are to:*
>
> - *encourage SR&ED to be performed in Canada by the private sector through broadly based support;*
> - *assist small businesses to perform SR&ED;*
> - *provide incentives that are, as much as possible, of immediate benefit;*
> - *provide incentives that are as simple to understand and comply with and as certain in application as possible; and*
> - *promote SR&ED that conforms to sound business practices.*
>
> *Federal income tax incentives for SR&ED assist the private sector in developing new products and processes, improving productivity, enhancing competitiveness and growth, and creating jobs for the benefit of all Canadians.*

broad-based tax incentives, that leave day-to-day decisions on research and development projects in the hands of the private sector. While there will also continue to be a role for grant programs targeted to research and development in industry, the tax system is best suited to delivering general incentives.

Incentives should not be used or set at a level to promote research and development activities that do not conform to sound business practice. Investments in research and development use scarce Canadian resources – manpower, capital equipment and financial resources. If incentives for research and development were made too generous, Canadians could be led to over-investing in research and development and as a result under-investing in other more productive activities. Improved use of technologies can occur, for example, by firms buying state of the art equipment just as much as by investing in research and development. At some level of tax incentive, research and development activities that were unprofitable, in a business sense, would become attractive to investors solely because of the tax treatment. The result would be a waste of valuable resources. While incentives should be used to promote research and development, the basic profitability of research and development, as determined by the marketplace, should be the prime determinant of what and how much industrial research and development is done.

As much as possible, tax incentives for research and development should be of immediate benefit to firms. The proposal set out in this paper, together with the other actions announced in the budget, will increase the ability of firms, particularly start-up firms or firms who are high research and development investors, to use the tax incentives now in place for research and development. As a result, the incentives will be more effective.

Tax incentives for research and development should be as simple to understand and comply with and as certain in application as possible.

The goal of research and development policy is not to create research and development solely for its own sake. To be effective, the results of research and development have to be used – to create jobs, to improve productivity and competitiveness, to develop new products that Canadians can sell to other Canadians and to the world. To a large extent, the responsibility for this must rest with the private sector.

Administration

The overall federal objective is to administer the SR&ED tax incentives to ensure that eligible work meets all the relevant criteria in respect of the tax policy objectives for SR&ED. Specific objectives are focused on delivering the federal income tax incentives for SR&ED in an accessible and equitable manner that promotes tax policy objectives while ensuring compliance

with the conditions necessary to qualify for receipt of the incentives.[35] These specific objectives are to:

- increase awareness and understanding of the availability of the SR&ED tax incentives;
- promote accessibility of the SR&ED tax incentives to the targeted clientele;
- ensure the validity, completeness and accuracy of claims made;
- deliver a timely and cost-effective incentive; and
- ensure consistency and predictability in delivering the SR&ED tax incentives.

Linkages Between Tax Policy and Administration

Linkages between the federal tax policy and administrative objectives relate to the ability of the Department of Finance and Revenue Canada to monitor and manage the income tax incentives for SR&ED. The Department of Finance is responsible for ensuring that the incentives continue to meet the government's tax policy objectives in respect of SR&ED. Revenue Canada is responsible for ensuring the equitable and efficient delivery of the incentives and for ensuring compliance with their intent.

This linkage of objectives and shared responsibility for monitoring and managing the SR&ED tax incentives result in a number of functional interactions between the departments. These have the common purpose of identifying and meeting the differing needs that each department must satisfy in order to fulfil their respective monitoring and management responsibilities.

Evaluation Questions

The performance of the federal SR&ED income tax incentives is assessed in terms of their relevance, impacts and effects, cost-effectiveness and delivery in relation to the objectives established for them by the government. These evaluation questions are elaborated on below in relation to the policy and administrative objectives underlying the SR&ED tax incentives.

Tax Policy

The following four questions were considered in evaluating the tax policy underlying the SR&ED tax incentives:

i) the economic rationale for assisting research and development and the mechanisms that are available for doing so;

ii) the amount of federal income tax assistance currently being provided to SR&ED performers in Canada, and on what and where it is being spent;

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[35] See Revenue Canada (1993), p. 4.

iii) the impact of federal income tax assistance on the level of SR&ED spending and economic activity in Canada, and the cost-effectiveness of this assistance; and

iv) the extent to which federal income tax assistance for information technology SR&ED is relevant, effective and cost-effective.

Administration

The following four questions were considered in evaluating the administration of the SR&ED income tax incentives. They provide an assessment of the delivery of the SR&ED tax incentives in terms of their effectiveness and client service:

i) the extent to which the goals and objectives for administration are clearly defined, achieving expected results and, where applicable, appropriately linked to administrative policies;

ii) the adequacy of processes, procedures and systems now in place to support information needs relating to the SR&ED tax incentives;

iii) the extent to which administrative policies, procedures, organization and systems provide for effective delivery and an appropriate level of service to clients; and

iv) the adequacy, precision and appropriateness of processes for scientific review and financial audit and their associated criteria for determining admissibility and accuracy of claims.

Conduct of the Evaluation

A variety of methodologies were used to address the central evaluation questions. They included: surveys and interviews with industry, administrators and research and development experts; econometric analyses of the responses of corporate SR&ED performers to survey questions relating to incrementality and imitation; analyses of taxation, financial and industry data; and literature reviews.

An extensive series of cross-country interviews and focus group discussions were conducted with management and staff responsible for delivering the SR&ED tax incentives to clients on a daily basis. Industry associations representing a broad cross-section of the claiming population were interviewed. Discussions were held with senior professionals involved in science and technology fields from other government departments and within universities. Information was also obtained through the consultations that took place as part of the review of information technology SR&ED undertaken jointly by the Department of Finance and Revenue Canada in 1995.

Data bases maintained by Revenue Canada were an important source of income tax information on SR&ED for the evaluation. However, the Revenue Canada data bases do not contain information on certain issues subject to evaluation. Information on the amount of SR&ED spending that is directly attributable to the SR&ED tax incentives (i.e. incremental spending on

SR&ED) and the associated concept of cost-effectiveness are examples. Furthermore, the data were, at times, limited in their usefulness due to changes made over time to both the content and range of data collection.

In order to supplement the data existing in Revenue Canada data bases, the Department of Finance and Revenue Canada contracted with Abt Associates of Canada[36] to conduct a survey of a relatively large sample of corporations that had claimed income tax deductions or credits in respect of SR&ED. Survey techniques in evaluation studies have consistently proved to be a very useful and reliable way of gathering information on the behaviour of particular populations and of generating data not otherwise available.

In 1993, the Australian Bureau of Industry Economics published the results of an evaluation it undertook of income tax assistance to research and development in Australia.[37] The evaluation findings were based in large part on data obtained from a survey of corporate performers of research and development. The Australian evaluation was designed to assess the effectiveness of the Australian research and development tax concession in achieving its stated objectives, focusing in particular on the objectives of increasing company investment in research and development, making companies more innovative and internationally competitive, and establishing whether the assistance had a positive net contribution to economic welfare in Australia.

Given the nature and timing of the Australian evaluation, key Australian officials involved in that evaluation work were consulted to gain insights into the design and focus of the Canadian survey instrument. Canadian research and development industry associations and firms were also instrumental in contributing to the design of the survey and in providing listings of contact names and telephone numbers to facilitate the survey process.

The survey conducted by Abt Associates and Canadian Facts, an associated market research firm, was used to obtain information and insights on:

- the characteristics of the claimants, their decision criteria for investing in SR&ED, the types of SR&ED in which they engage and the manner in which they do so;
- the forms of government support for research and development preferred by industry;
- incrementality, cost-effectiveness and compliance costs related to the federal SR&ED tax incentives;
- innovativeness, imitation and competitiveness; and

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36 Effective September 1996, Abt Associates of Canada became known as ARC, Applied Research Consultants.

37 See Bureau of Industry Economics (1993) and Hawkins and Lattimore (1994).

– the experience of claimants and accountants with the administration of the SR&ED tax incentives including industry perceptions regarding the level and quality of service received from Revenue Canada.

A total of 501 firms participated fully in the survey. In addition, a list of questions dealing with administrative issues was given separately to 27 accounting and consulting firms that represented about 2,000 SR&ED claimants.

The survey findings are contained in a background report entitled *Evaluation of Income Tax Incentives for Scientific Research and Experimental Development in Canada: Survey of Claimants*. Where they were found to be significant, the findings are reported separately on the basis of claim size, taxpaying status, industry sector, region and type of SR&ED such as SR&ED relating to information technology. That report also describes the survey methodology chosen, lists the questions asked of survey participants and indicates the contributions of research and development industry associations and firms in assisting in the design of those questions.

Abt Associates and Canadian Facts were also contracted by Revenue Canada to conduct a second survey of 200 first-time corporate claimants who submitted retroactive claims for SR&ED tax incentives instead of having applied for the SR&ED tax incentives in earlier years. One-half of the survey participants submitted retroactive claims following the 1994 budget announcement which restricted the allowable time period for filing claims – these are referred to as "bulge" taxpayer-requested adjustments (TPRs); the other half, prior to that time. The purpose of the survey was to determine why these new claimants did not file claims relating to SR&ED expenditures at the time the expenditures were incurred. Each of the participants had at least one retroactive claim for the 1992 and preceding taxation years. The findings are contained in a background report entitled *Survey of New Claimants of Scientific Research and Experimental Development Tax Incentives*.

Tax Policy

This section provides the evaluation findings relating to the relevance, impacts and effects, and cost-effectiveness of the SR&ED tax incentives.

Relevance[38]

Research and development produces technology, a form of knowledge that is used to enhance the productivity of factors of production. The advancement of technologies in production processes, whether through the invention of new technologies or the enhancement of existing ones, has long been recognized as an important determinant of longer-term economic growth.

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38 See Department of Finance (1997) for further information on the importance of research and development for economic growth, the market failure associated with research and development, empirical evidence on the size of that market failure, the rationale for governments to support investment in research and development, and alternative mechanisms available to governments to assist research and development.

There is strong empirical evidence that technology, and knowledge in general, are not fully *appropriable* in a market economy.[39] The price that buyers actually pay to acquire a technology is usually lower than the price that they would have been willing to pay had the developer been able to fully appropriate the potential revenues relating to that technology. This results in a *spillover benefit* to society.[40] Inappropriability of a good leads to its underproduction in a market economy. Underproduction due to inappropriability is a form of market failure; left alone, the market will not allocate an efficient quantity of resources to the production of the inappropriable good.

The key economic rationale for governments to assist research and development is this failure of the market to provide an efficient or socially optimal allocation of resources for research and development. Since the benefits of research and development spill over, or extend beyond the performers themselves, to other firms and sectors of the economy and the value of these benefits is not fully captured by the performer then, in the absence of government support, firms would perform less research and development than is desirable from the economy's point of view. Empirical studies show that spillovers exist and can be of substantial size.

Impacts and Effects

In response to this market failure, most countries provide assistance for research and development in the form of tax or non-tax incentives. The specific form of government support used depends on the nature of the market failure and the policy objectives being pursued.

Tax and non-tax incentives possess different characteristics and may be used to achieve alternative, but complementary objectives. Specific incentives within these general categories can take many different forms. For example, income tax support may be provided through various types of accelerated or bonus deductions, tax credits or incremental versions of those deductions or credits. Non-tax support may be in the form of patent protection, research and development conducted by government laboratories and related establishments, or grants, loans or contracts provided to industry, universities and other performers outside of government. In terms of their effectiveness, existing evidence seems to favour the use of indirect support such as tax incentives over direct subsidies such as grants.

1) Characteristics of the SR&ED Claimants

Survey results revealed substantial variation in the length of time firms claiming the SR&ED tax incentives had been operating in Canada. More than 23 per cent of respondents started operations before 1970; 20 per cent, between 1970 and 1979; 43 per cent, between 1980 and 1989; and 11 per cent, after 1989. On average, respondents had claimed SR&ED tax incentives for seven years. The survey also found that the proportion of non-Canadian ownership is relatively low among firms, but increases with the size category of SR&ED claims.

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39 See, for example, Romer (1990).

40 Empirical information on spillover benefits, or the difference between private and social rates of return to research and development investment, is contained in McFetridge (1995), Bernstein (1994) and Mohnen (1992).

The survey established a strong correlation between firm size, as measured by the number of employees, and the size of SR&ED claims. Furthermore, more than half of the firms in the sample reported employment growth for the period 1992 to 1994 with medium-sized firms in the area of information technology SR&ED most likely to report employment increases. Respondents also indicated, with little variation by firm type or size of claim, that about 30 per cent of the work time of employees is devoted to SR&ED.

Most firms in the survey sample were not a subsidiary of a larger firm, although being a subsidiary is more typical of firms with larger SR&ED claims. Dedicated research and development subsidiaries among the survey participants were rare and respondents reported that about one-third of their SR&ED is carried out in conjunction with production activities.

In terms of areas of research, survey respondents mentioned information technology SR&ED about 35 per cent of the time; manufacturing and processing SR&ED, about 25 per cent; and materials SR&ED, 12 per cent.[41] Respondents also indicated that 75 per cent of their SR&ED spending was on new products – i.e. developing new goods and services or improving existing ones – changes and improvements to production processes accounted for the remainder. Developing new products or processes accounted for 61 per cent of the SR&ED spending of the survey participants; improving existing products or processes, 34 per cent; and imitating existing products or processes, 5 per cent. Information technology firms reported spending less (1.2 per cent) on imitating existing products or processes than other types of firms (7 per cent).

The possibility of imitation and other forms of spillovers such as staff turnover are widely recognized in the literature and by market participants. However, imitation was not perceived as an important problem by most survey participants. Survey results indicate that firms attempt to control spillovers through both intellectual property and trade secrecy protection. Information technology firms use both of these sources of protection to a greater extent than other firms. Large information technology firms are more likely to use intellectual property and trade secrecy protection than smaller ones.

2) Importance of Research and Development and Federal Support

There was strong agreement among survey respondents (81 per cent) that research and development plays a very important role in the strategy of their company. Most of this work takes the form of experimental development or applied research.

Of the many variables identified in the literature as affecting a firm's decision to invest in research and development, "creating a competitive advantage over competitors' products or processes" was identified as the most important by survey participants. This was followed by "cash flow position" and "government tax and non-tax support", respectively. These findings suggest that the decision rule of firms is profit or net-worth oriented and that internal cash flow is an important consideration which is assisted by government support.

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41 Other areas of research mentioned include: environment (7 per cent); energy (5 per cent); biotechnology (3 per cent); pharmaceuticals (2 per cent); and medical, software, forestry, electronic and engineering (12 per cent).

There are many forms of government support for research and development. They include federal and provincial tax credits, refundability provisions for non-taxpaying firms, income tax deductibility, intellectual property or trade secrecy protection, and government grants and contracts for research and development. The survey sought information on these alternative mechanisms for providing support so as to rank which are considered more important or beneficial by SR&ED firms. Respondents rated the federal SR&ED tax credit as the most important component in the system of government support followed by refundability of the federal credit.[42] Government grants and contracts received the lowest rating.

These results did not vary appreciably by claim size or type of research and development. However, Quebec-based firms were more inclined to rank highly the importance of government tax and non-tax support and, within this category, provincial tax incentives and government grants and contracts.

3) Expenditures, Deductions and Tax Credits

Between 1988 and 1992, current and capital expenditures eligible for the SR&ED tax incentives (that is, allowable expenditures) increased, in the case of:

- all corporations, by 50 per cent from $4.5 billion in 1988 to $6.9 billion in 1992; and
- smaller CCPCs, by 100 per cent from $0.7 billion in 1988 to $1.4 billion in 1992.

This resulted in the share of allowable expenditures for smaller CCPCs increasing from about 15 per cent in 1988 to 20 per cent in 1992. This suggests that smaller CCPCs became more heavily involved in SR&ED between 1988 and 1992.

SR&ED may be conducted in-house or on behalf of a taxpayer. Most SR&ED is performed in-house – this accounted for 76 per cent of the $6.9 billion in allowable expenditures claimed in 1992. However, the importance of SR&ED conducted on behalf of taxpayers is growing – the share of contract and third-party payments in allowable expenditures increased from 18 per cent in 1988 to 24 per cent in 1992. In terms of the use of contracts by SR&ED performers, the data indicate that approximately 40 per cent of the 8,725 claims for SR&ED tax credits in 1992 included an amount in respect of contract payments and 10 per cent included an amount in respect of third-party payments. In 1992, contract payments accounted for 43 per cent of total contract and third-party payments.

The share of contract and third-party payments made by smaller CCPCs increased between 1988 and 1992 by substantially more than the share of these payments made by all corporations. Taken together with the finding of the increasing involvement of CCPCs in SR&ED over the period, this suggests that this involvement took the form, in large part, of contracting with other taxpayers to have SR&ED undertaken on their behalf.

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[42] Refundability was rated much lower by large claimants (especially larger information technology claimants). This is not surprising since, among corporations, refundability is only available to smaller CCPCs and, as indicated in Chapter III, such companies tend to file claims for relatively small amounts of tax credits.

Expenditures eligible for deduction also increased each year over the period 1988 to 1992, and averaged about 88 per cent of allowable expenditures for all corporations and 77 per cent of allowable expenditures for smaller CCPCs. However, these shares decreased each year over the period (particularly for smaller CCPCs) reflecting adjustments due primarily to SR&ED tax credits claimed in previous years and also to amounts of government and non-government assistance receivable in a year. These share trends suggest that the SR&ED tax credits have become a relatively more important source of funding for corporations (particularly smaller CCPCs) than other types of non-tax assistance and the SR&ED tax deduction. An examination of expenditures eligible for the SR&ED tax credits (i.e. qualified expenditures) also supports this finding. Specifically, as a share of allowable expenditures, qualified expenditures remained relatively constant between 1988 and 1992 at about 81 per cent for all corporations and 85 per cent for smaller CCPCs.

In 1992, the value of corporate claims for the SR&ED tax credits was $1.25 billion, an increase of 60 per cent over the value of claims made in 1988. Smaller CCPCs (i.e. those eligible for the enhanced rate of tax credit) accounted for 30 per cent ($378 million) of the 1992 total and represented 76 per cent (6,632) of the 8,725 claimants in that year. In contrast, smaller CCPCs accounted for 24 per cent ($192 million) of the almost $800 million in corporate tax credit claims in 1988 and 68 per cent (3,400) of the 5,000 claimants in that year. This indicates that the number of smaller CCPCs accessing the SR&ED tax incentives increased over the period and that the average amount of tax credit claims remained relatively constant. The number of other corporations accessing the tax incentives also increased over the period, but by a smaller amount so that the average amount of tax credits claimed by all corporations fell.

The refundability features of the SR&ED tax credits are very important for smaller CCPCs. About 80 per cent of the tax credits earned by these corporations over the period 1988 to 1992 were refunded to them and between 80 per cent and 86 per cent of all smaller CCPCs claiming SR&ED tax credits received a refund. The refund of current expenditures at the 100 per cent rate was the most valuable to these firms, accounting for about 90 per cent of all refunds in each year.

Almost 20 per cent of the total number of claims between 1988 and 1992 were in respect of allowable expenditures of less than $20,000; these claims accounted for only 0.4 per cent of the value of SR&ED tax credits claimed in each year. Collectively, 71 per cent of claimants filed claims for under $50,000 of SR&ED tax credits; these claims accounted for only 8 per cent of the value of all claims for SR&ED tax credits in each year from 1988 to 1992. In contrast, the top 300 claimants in terms of claim size (for 1992, those with claims in excess of $520,000 each) accounted for only 3 per cent of claimants, but 67 per cent of the value of all tax credit claims over the period. The average claim size of the top 300 claimants increased from about $1.9 million in 1988 to $2.8 million in 1992. A total of 222 corporations which claimed tax credits each year between 1988 and 1992 were also in the top 300 category for at least one of those five years. However, only 72 corporations were consistently among the top 300 firms in each of the five years.

Four provinces accounted for 96 per cent of the value of SR&ED tax credit claims in 1992 (based on corporate head office reporting). Ontario and Quebec represented 82 per cent of these claims; B.C., 8 per cent; and Alberta, 6 per cent. These shares remained fairly constant over the period 1988 to 1992.

Five industry sectors accounted for 91 per cent of the value of SR&ED tax credit claims in 1992. The manufacturing sector accounted for 48 per cent of these claims; the services sector, 19 per cent; the communication sector, 10 per cent; the wholesale trade sector, 9 per cent; and the finance and real estate sector, 6 per cent. The share of tax credits claimed by the manufacturing sector declined between 1989 and 1992, while the share for the communication and the finance and real estate sectors increased.

Data on claims for SR&ED tax credits by unincorporated businesses between 1990 and 1992 reveals that:

- the value of these claims averaged only $8.6 million per year over the period and decreased by 36 per cent from $10.6 million in 1990 to $6.7 million in 1992; and

- the number of unincorporated businesses claiming SR&ED tax credits also decreased by 36 per cent from 4,772 in 1990 to 3,051 in 1992.

The "typical" individual performing SR&ED in a business context can be described as a married male in his thirties or forties who resides in Quebec, has an annual income of less than $100,000 and is in the top income tax bracket. However, “aggressive” investors (those who spent a larger proportion of their total income on SR&ED) were more likely to be: under 30 years of age; residents of a province other than Quebec; and subject to the lowest income tax rates.

Cost-Effectiveness

Government fiscal policies are designed to affect the behaviour of individuals and firms, and by so doing, to increase the overall benefit to society. Cost-effectiveness provides a perspective on whether or not a policy can achieve this goal by comparing the incremental change in economic behaviour induced by the policy to forgone government revenues. For example, if one dollar of tax revenues forgone generates at least one dollar of spending in the target activity or, alternatively, if the ratio of incremental expenditures to tax revenues forgone is greater than or equal to unity, then the policy is said to be cost-effective and may result in a net gain for the Canadian economy. In this evaluation, the cost-effectiveness of the SR&ED tax incentives was measured as the increase in SR&ED spending induced by the tax incentives – their incrementality – per dollar of federal tax revenues forgone.

1) Approaches to Estimating Incrementality [43]

Methodologies that have been used in previous studies to estimate the incrementality of tax incentives for research and development and to obtain other information pertaining to these incentives can be grouped into three categories: case studies, econometric analysis, and surveys and interviews. Each has its advantages and disadvantages. The choice of one methodology over another depends on three factors:

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[43] Annex II, Approaches for Estimating Incrementality, reviews these methodologies and discusses the strengths and weaknesses of econometric analysis, surveys and interviews, and case studies for obtaining information on incrementality and other data on research and development.

– the questions subject to investigation and the desired depth and detail of the answers required;

– feasibility, given data quality and availability; and

– timing.

Case studies are used to examine specific target groups or specific facets of a policy in substantial detail and are often complemented by interviews with key decision-makers within the target population. However, since case studies lack the ability to identify patterns of behaviour that are representative of the population as a whole, they are not particularly well suited for evaluating the effectiveness of a broadly based policy such as the SR&ED tax incentives. Case studies are more appropriate for analysing, for example, a grant program for research and development through which funding is provided to a relatively small number of companies or industry sectors.

Econometric analysis uses economic theory and statistical techniques to attempt to explain research and development spending behaviour in response to a tax incentive for research and development. Such studies find that the longer-run effects exceed the short-run effects. This is due, in part, to adjustment costs in the short term – for example, the costs of reorganizing business activities and acquiring new machines and skilled labour. It is also due to the effect that research and development has on output growth over the longer term which, in turn, stimulates additional research and development. The difference between the short-run and long-run effects indicates that the impact of tax incentives for research and development on research and development spending takes time to materialize.[44] However, in order to estimate long-run impacts, econometric models typically require additional information that is exogenous to the model. Often, this information is not available. Consequently, sensitivity analyses are conducted which provide only an indication of the long-run impacts of a policy change.

Surveys of companies and interviews with officers involved in managing and performing research and development activities are another method for evaluating the incrementality of research and development tax incentives, and are often used in conjunction with econometric analysis. By contacting the individuals directly involved in research and development activities, surveys provide insights into the decision-making processes of firms and policy-induced behavioural changes (e.g., attributable to tax incentives) rather than drawing inferences from the use of statistical tools. They also allow data to be collected that would not otherwise be available. In this evaluation, the survey approach was used to estimate incrementality.

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44 The significance of this finding is that temporary, medium-term or constantly changing tax incentives for research and development are unlikely to realize their full potential in stimulating spending on research and development. The temporary aspect of the incremental tax credit in the U.S. has been identified by many analysts as one of its main weaknesses.

2) Survey Evidence on Incrementality

The overall impact of federal income tax incentives for SR&ED on expenditure levels is a central question in this evaluation. Abt Associates and Canadian Facts used the survey methodology to address this issue. It was decided that a telephone survey of corporations that had claimed SR&ED tax deductions or credits would be the most effective option to meet the information requirements of the evaluation.

The survey sample was stratified into small, medium and large categories based on the size of corporate claims for SR&ED tax credits in 1992. As indicated in Chapter III, a very large proportion of corporations claimed relatively small amounts of SR&ED tax credits. A non-stratified sample would have substantially under-represented the much smaller number of firms in the medium and large categories that account for most of the value of tax credit claims. Firms within the small and medium categories were selected randomly. All 300 firms comprising the large category were included in the sample. A total of 501 firms participated in the survey: 166 in the small category; 206 in the medium category; and 129 in the large category.

Survey participants consisted of the Chief Financial Officer, Director of Taxation or equivalent in each firm. Each survey participant was asked about the incrementality of the SR&ED work for which they received federal tax credits or deductions. Specifically, firms were asked to estimate the impact of the federal tax incentives on their SR&ED expenditures. For firms indicating that their SR&ED expenditures would have been lower or higher in the absence of the federal SR&ED tax incentives, they were asked by what percentage their spending on SR&ED would have been different.

Survey respondents indicated that the SR&ED tax incentives have a substantial impact on their spending. Nearly 60 per cent of firms reported that their SR&ED expenditures were higher as a result of these tax incentives. Expenditure reductions in the absence of the tax incentives would have had a variety of impacts, reducing the scale of projects, postponing projects and cancelling projects. Fewer firms reported that they would shift work outside Canada.

To arrive at an overall incrementality estimate, the responses of the individual survey participants were weighted by the expenditures of each firm. Weighted incrementality was found to be 32 per cent – i.e. reported SR&ED expenditures were 32 per cent higher as a result of the federal SR&ED tax incentives. The 95 per cent confidence interval on this weighted incrementality estimate ranges from 30 per cent to 35 per cent.

Econometric analysis of the survey results showed no statistically significant difference in the incrementality results for information technology firms versus other firms. Regression results also revealed the role of the SR&ED tax incentives in the decision-making process of firms. In particular, firms for which after-tax rate of return and cash flow considerations are more important tend to be more responsive to the SR&ED tax incentives. Similarly, firms regarding research and development as crucial to their success report a lower degree of incrementality. Two observable characteristics of firms were found to be statistically significant in the incrementality regressions, but the magnitude of these effects is small. Specifically, firms with: i) a greater percentage of either new product or process SR&ED; or ii) SR&ED results subject to intellectual property protection tend to be more responsive to the incentives. All other observable firm characteristics, such as size, sector, age, ownership and research and development intensity,

were found not to be statistically significant. This implies that targeting SR&ED tax incentives to these firm characteristics would not likely increase their incrementality (or their cost-effectiveness).

Survey firms were also asked to consider their investment spending in areas other than SR&ED in the hypothetical case of no federal SR&ED tax incentives. The proportion of respondents indicating that the tax incentives caused their non-SR&ED investment spending to be higher was 36 per cent. Quebec-based firms were most inclined (45 per cent) to report this effect.

3) Evaluation Finding

Applying the cost-effectiveness methodology to the federal SR&ED tax incentives, the incentives would be cost-effective if one additional dollar of income tax support induced at least one dollar of additional SR&ED expenses that would not have been made in the absence of the tax support. The numerator of the cost-effectiveness ratio is the product of the incrementality response of each firm multiplied by the amount of SR&ED expenditures that it incurred. The denominator, the estimated tax cost of the incentives, has three components:

- the net tax cost of the tax credits in reducing income tax otherwise payable;
- the tax cost of expensing instead of depreciating SR&ED capital expenditures; and
- the tax cost of the refundability aspect of the incentive system.[45]

The tax costs were summed across all survey firms to obtain the total SR&ED tax costs to the federal government. This was combined with the data on incremental SR&ED expenditures to calculate the amount of incremental SR&ED expenditures per dollar of tax revenues forgone. These calculations resulted in a cost-effectiveness ratio of 1:38. This means that each dollar of tax revenues forgone as a result of the tax incentives generated $1.38 in incremental SR&ED spending. In other words, the federal SR&ED tax incentives were found to be cost-effective.

4) Other Evidence on Cost-Effectiveness

Existing studies provide empirical evidence on the cost-effectiveness of income tax incentives for research and development in Canada and other countries. However, the studies on the cost-effectiveness of such incentives in Canada are relatively dated and apply to different incentive regimes than are the subject of this evaluation. Cost-effectiveness studies have also been undertaken of tax incentive systems for research and development in other countries, many of which are very recent but, once again, apply to different incentive regimes. This section briefly discusses these studies. Table 4.1 compares the cost-effectiveness results of this evaluation with the results reported in other Canadian and foreign research work – the methodologies and data used in, and the tax incentives subject to, these analyses are also indicated.

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[45] See Appendix D of Abt Associates of Canada (1996a) for further information on the methodology used to estimate the federal tax cost.

Table 4.1
Cost-Effectiveness Studies of Research and Development Tax Incentives in Canada and Other Countries

Study	Country	Methodology	Data Type	Incentive/Period	Cost-Effectiveness Ratio*
Abt Associates (1996a)	Canada	survey	501 firms	tax credits & deduction: 1994	1.38
Bernstein (1986)	Canada	demand model	27 firms	tax credits: 1984	0.83-1.73
Mansfield & Switzer (1985a & 1985b)	Canada	survey & interviews; impact model	55 firms; 3 industry groups	tax credits & incremental bonus deduction: 1980-83	0.38 (range: 0.11-0.67)
Bureau of Industry Economics (1993)	Australia	survey	880 firms	bonus deduction: 1987-89	0.60-1.00
Asmussen & Berriot (1993)	France	demand model	339 firms	incremental tax credit: 1985-89	0.26
Mansfield (1985 & 1986)	Sweden	survey & interviews	40 firms	incremental deduction: 1981	0.34
Berger (1993)	U.S.	impact model	263 firms	incremental tax credit: 1982-85	1.74
Hall (1993)	U.S.	demand model	950 firms (average)	incremental tax credit: 1981-91	2.00
Mansfield (1985 & 1986)	U.S.	survey & interviews	110 firms	incremental tax credit: 1981-83	0.30-0.40
McCutchen (1993)	U.S.	demand model	20 firms in 4 groups	incremental tax credit: 1982-85	0.29
Swenson (1992)	U.S.	econometric analysis (impact models)	firms	incremental tax credit: 1981-85	0.29
Hines (1993)	U.S.	demand model	116 firms	tax deduction, multinationals: 1989	1.17-1.83

* The increase in research and development spending in the country's currency per one currency-unit increase in tax revenues forgone due to research and development tax incentives. For example, Abt (1996a) found that Canada's research and development tax incentives induce an additional $1.38 in research and development spending per dollar of tax revenues forgone.

Between 1980 and 1983, Canada provided investment tax credits and an incremental bonus deduction for eligible spending on SR&ED. Using a survey and interviews, Mansfield and Switzer (1985a and 1985b) found that these tax incentives were not cost-effective; they induced only about $0.38 of additional research and development spending for every dollar of tax revenues forgone. The 95 per cent confidence interval on this cost-effectiveness estimate ranges from $0.11 to $0.67. This small effect was attributed largely to a low effective rate of tax credit; many firms did not have sufficient taxable income to make full use of their tax credits and, furthermore, the tax credit was taxable – i.e. expenditures eligible for deduction were reduced by an equivalent amount. The results of a simple econometric analysis using an impact model were found to support the survey findings.

Estimating a demand model using firm-level data for the period 1975 to 1980, Bernstein (1986) came to a different conclusion. He found that, in 1984, the research and development tax credit resulted in a substantially higher ratio of incremental spending to tax revenues forgone and might have been cost-effective. Specifically, research and development expenditures were estimated to have increased by between $0.83 and $1.73 for every dollar of tax revenues forgone. The smaller ratio assumes that output is unaffected by the increase in research and development spending. The larger ratio takes account of this secondary impact – i.e. the additional research and development spending induced directly by the tax credit causes output to increase which, in turn, increases research and development spending. Mansfield and Switzer did not consider the indirect impact on output in their analysis.

As noted above, the current system of federal tax incentives for SR&ED is very different from those subject to analysis by Bernstein and Mansfield and Switzer. Indeed, the current incentives were designed, in part, to respond to concerns that had been raised by businesses and academics about the cost-effectiveness of previous federal tax incentives for SR&ED.

Research and development tax incentives differ significantly among countries and, in particular, from the incentives currently available in Canada. Using the same basic approaches – i.e. econometric analyses (based on both demand and impact models) and surveys and interviews – researchers have attempted to ascertain the cost-effectiveness of these foreign incentives as they have existed at various points in time. The results vary dramatically among countries and, in the case of the U.S., among studies. Results shown in Table 4.1 for Australia, France and Sweden indicate that the research and development tax incentives in those countries may not be cost-effective. Results for the incremental tax credit in the U.S. are mixed – some studies suggest that this incentive is cost-effective; others arrive at the opposite conclusion. International comparisons of cost-effectiveness are difficult given the fundamental differences in the research and development tax incentives subject to examination. However, the studies of research and development tax support in various countries reveal that these incentives can be cost-effective in stimulating additional research and development.

Impacts on the Canadian Economy

Cost-effectiveness does not account for all of the economic benefits and costs associated with providing the federal income tax incentives for SR&ED. One way to capture these effects is through economic modelling of the Canadian economy. This was also undertaken and provides

another perspective on how such a policy can affect the overall benefit to society. Specifically, a static computable general equilibrium (CGE) model of the Canadian economy, based on 1992 data, was used to assess the potential net economic impacts of using an incentive for research and development, funded through taxation, to stimulate investment in research and development by the private sector. For this purpose, the CGE model took account of available literature estimates of research and development spillovers for the Canadian economy, the cost-effectiveness result for the SR&ED tax incentives and the amount of SR&ED tax credits claimed in 1992. The basic structure of this model is described in Box 4.1.[46]

The Canadian economy was first modelled in the absence of an incentive for research and development. Relative prices in this simulation reflect the market failure associated with research and development and the loss in economic efficiency due to the resulting misallocation of resources.

A more efficient allocation of resources is achieved by introducing an incentive for research and development. However, such an incentive not only provides economic benefits by correcting for the market failure associated with research and development, but also imposes economic costs since revenues must be raised to fund the incentive.

Spillovers arising from the additional research and development stimulated by the incentive reduce costs of production for firms. Two assumptions were made to capture this effect. First, it was assumed that production costs in all industries are reduced by 10 cents for every additional dollar invested in research and development. This aggregate spillover value is an average of research and development spillovers estimated for certain manufacturing industries in Canada[47], weighted by the contribution of each industry to gross output. The weighted average of spillover benefits was calculated for each individual study, and the lowest weighted average was used in the CGE model. Second, based on the cost-effectiveness ratio calculated for the SR&ED tax incentives, it was assumed that each dollar of research and development incentive generates $1.38 in additional investment in research and development.

The tax revenues needed to fund the research and development incentive are raised in two alternative ways in the CGE model simulations: i) flat tax case – by increasing all tax rates by the same percentage-point amount to obtain an increase in tax revenues of $1.25 billion (this equals the amount of SR&ED tax credits earned in 1992); and ii) *ad valorem* tax case – by increasing all tax rates by the same percentage to achieve the same result. The taxes that are changed in this way are personal and corporate income taxes, payroll taxes and commodity taxes.

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46 More detailed information on the CGE model structure is provided in Souissi et al (1997).

47 As reported in Bernstein (1994).

Box 4.1
Modelling the Economic Impacts of Income Tax Incentives for Research and Development: A Computable General Equilibrium Model

Computable general equilibrium (CGE) models are the standard methodology for estimating the longer-term impacts of a policy change on an economy. CGE models capture the economic behaviour of consumers, producers and factors of production both within an economy and through trade with other countries. A policy change in these models affects the relative prices of factors of production and commodities. These relative price changes, in turn, affect demands for factors of production, and demands for, and production of, all commodities. Equilibrium in CGE models is characterized by a set of (intermediate and primary) factor prices, input demands, output supplies and final demands such that demands equal supplies for all commodities and inputs. Economic impacts are assessed by simulating CGE models both with and without the policy change. Impacts on key economic variables such as real income and real output are then measured by comparing values generated by the policy change to corresponding base-year values.

An incentive for research and development helps correct for the failure of the market to provide an efficient or socially optimal allocation of resources for research and development. This market failure arises because the benefits of research and development spill over to other firms and sectors of the economy, and the value of these benefits is not fully captured by the research and development performer. Many empirical studies have shown that research and development spillovers exist. These spillovers reduce variable costs of production, enhance factor productivity and contribute to output expansion. Social rates of return from research and development can be up to five times higher than private rates of return, and the size of the spillover benefits varies significantly.

The CGE model used in the evaluation focuses on the allocation of an economy's limited resources among competing uses. It assumes full utilization of resources so that changes in relative prices lead only to a shift in employment across sectors with no change to the overall level of employment unless the supply of labour changes. The model provides estimates of the longer-term effects of a policy once the economy has fully adjusted to the new policy environment.

The CGE model was first simulated in the absence of an incentive for research and development. In this case, relative prices capture the resource misallocation due to the market failure associated with research and development. A research and development incentive changes relative prices and shifts the same overall supply of resources to a more efficient use. As a result of this shift in resources, total factor productivity and real income rises.

Thus, in simulating the economic impacts of an incentive for research and development, the CGE model combines: i) the economic benefits of reduced production costs caused by the research and development spillover; and ii) the economic costs of increased taxes to fund the incentive.[48] If the economic benefits exceed the economic costs, then the economy is better off in providing the incentive to research and development. The simulation results showed that this is indeed likely to be the case for the Canadian economy.

A research and development incentive, funded through taxation, yields a net gain in real income in the CGE model. This net gain ranges from about $20 million to $55 million per annum. This is indicative of the positive net effect of research and development incentives: on average, every dollar of incentive yields a net gain in real income in the model ranging from two cents in the flat tax case to four cents in the *ad valorem* tax case, factoring in the economic costs from financing the incentive through taxation. It should be stressed that this is the lower limit of the net gain as it is based on the lower limit of the range of spillover estimates reported in the literature. The net gain will be larger, the greater is the size of the research and development spillover included in the model.

Administration

Scope of the Administrative Evaluation

This section of the report assesses the administration of the SR&ED tax incentives by Revenue Canada. The findings address the four administrative issues identified for evaluation and are drawn from the two surveys conducted by Abt for the evaluation, from the cross-country interviews with departmental staff, and the interviews with academics and industry association representatives involved in research and development.

The evaluation focused on tax support for both large and small corporations and was conducted during a period of extremely high work loads and dynamic change in the administration of the SR&ED tax incentives. Several modifications to continue the improvements in administration have been made since the conclusion of the evaluation work. The most significant of these initiatives have been included as updates in this report.

Organization

The policy and legislation functions for the administration of the SR&ED tax incentives are located at Headquarters in Ottawa. The two main groups, the Tax Incentive Audit Section and the Scientific Research Section, work together to provide policy, functional guidance and direction. Actual delivery of SR&ED tax support is provided through field offices and involves both scientific and financial reviews of claims. The scientific review function is currently located

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[48] It should be noted that this net economic impact is based on an estimate of the full amount of spillover benefits associated with research and development as opposed to the benefit associated with the last dollar of investment in research and development in the economy. The latter is smaller than the former. Consequently, the CGE model results cannot be used as a basis for arguing that the level of government support for research and development should be increased.

in seven offices across the country; the financial audit function is also located in those offices and in an additional 31 offices. External scientists are employed on a consultancy basis from time to time either to provide specialized knowledge or to assist with large work loads.

> *Update: As announced by the Revenue Minister in April 1997, service to clients will be improved by increasing the number of science offices providing SR&ED services – three new full service offices and five satellite offices. Additionally, more industrial sector specialists will be utilized, both as consultants and departmental employees, to ensure up-to-date knowledge in the various sectors and enhance consistency in the science reviews. These specialists will be located where the sector is predominant; for example, the oil and gas specialists will be in Calgary.*

Goals and Objectives

The goals and objectives for delivery of SR&ED tax support, although well understood, were implied rather than articulated in detail until the early 1990s. Since then, there has been continual refinement of high level goals into operational objectives and standards. However, these existing standards are presently hard to meet due to workload pressures and new standards cannot realistically be put in place until the workload returns to normal.

The guiding principles for the SR&ED tax incentives have remained in effect since 1983.[49] These principles are in support of the overall goal to create SR&ED – not solely for its own sake but to create jobs, improve productivity and competitiveness and develop new products that Canadians can sell to other Canadians and to the world. While adjustments have been made to the SR&ED tax incentives since 1983, the basic policy direction has not changed. These goals and principles have remained relevant and are well supported by the SR&ED community. Accordingly, they continue to form an appropriate foundation for the development and delivery of administrative goals. Revenue Canada has developed administrative objectives which reflect and support the policy direction determined by the Department of Finance.

It has been difficult to establish performance goals and to obtain accurate measurement of their achievement due to problems with the range, completeness and capture of performance data within the delivery function. However, with the recent sudden increase in workload, efficiency strategies came under close review resulting in significant improvements in the scope, collection and analyses of operational performance.

An expanded list of performance indicators has been recently developed. These indicators will provide more meaningful measures of the success of the tax incentive delivery in meeting its objectives but not all of these can be put in place until the supporting information system is completed. In addition to the expanded set of performance indicators, a comprehensive set of measures has been developed as part of an overall Program Management Information Agreement, presently being developed by senior officials in Revenue Canada.

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49 See Department of Finance (1983), pp. 1-2.

One major administrative goal which is carefully monitored is the delivery of timely service for which new service standards have been in place since 1992. Revenue Canada's stated goals for corporations are to:

- issue a refund cheque within 120 days of receiving a completed claim for a refundable tax credit – a reduction from the previous 180 days; and

- inform the corporation within 120 days of receiving a completed claim for a non-refundable tax credit whether or not it will be accepted as filed or an audit will be conducted and, if an audit is to be conducted, offer the corporation the choice of having it completed within one year.

Previously, claimants for non-refundable tax credits had to wait for their claim to be audited or become statute barred (up to four years) in order to know its final status.

> *Update: The evaluation found that the service standard of 120 days was not being met due to unanticipated workload pressures. As of April 1997, the department has announced a return to this commitment of 120 days.*

Information Management

The management information needs of the SR&ED tax incentives are not well served by present data systems which must access several different data bases. Also, in response to legislative needs, changes in the quantity and scope of the data captured have been made. This has reduced the ability to track trends and patterns in claims. The existing and future informational needs are being identified and addressed on both a short- and a long-term basis.

Information on the SR&ED tax incentives is scattered in a number of Revenue Canada's headquarter systems and in a variety of regional systems. Different regional systems exist for science information and for financial audit and very few of them are the same from region to region. These systems are discreet – they are not linked to each other nor to the national systems.

Current information on the SR&ED tax incentives is not yet sufficiently historical for management direction purposes. Information on some larger, non-refundable clients has only been collected since 1992. SR&ED information on other categories of non-refundable clients has only been in the system since 1990. Until then, regions provided information to Headquarters from their different systems which makes compilation of comprehensive and/or comparable statistics very difficult. Much of the information that is in the audit system has proven difficult to access and inaccurate when it is obtained. Methods of reporting tax information have changed over the years to reflect changing legislation and operational needs, with the result that timeline comparisons are difficult or unavailable.

At Headquarters, SR&ED information is collected on four different systems, only one of which is exclusive to the SR&ED tax incentives. There has been some successful linking of two of the systems but, as yet, only limited success in linking the others, although urgency is placed on this by Revenue Canada and the Department of Finance. In the meantime, the limited linking that has been achieved has already provided useful information to the Department of Finance.

A possible solution of a new, single and comprehensive system is currently under review but fiscal constraint and workload pressures in Revenue Canada's Information Technology Branch have pushed out the timeline. A working committee has been established with members from Revenue Canada and the Department of Finance to look at the options for data consolidation. Downloads from the existing bases to a single file managed by a powerful, integrated data manipulator may be a more viable option.

There have been recent improvements and additions to the audit system for the SR&ED tax incentives. Extra fields have been added to capture information separately on refundable and non-refundable claims and new science-related data are now captured. A separate initiative is also underway to look at how data are captured. It is anticipated that efficiencies and enhanced accuracy can be achieved when data collection becomes standardized and is undertaken on-line in the local offices.

There have also been recent improvements to the data base containing information from the T661 and T2038 forms. In February of 1995, it was redesigned using a PC-based program and now has built-in edit checks to improve the quality of information. In addition, a concerted effort is being made to add to it any information missing from the full client base. However, information still cannot be rolled up longitudinally, as the range, type and organization of data have had to change over the years. Nonetheless, the changes in the thrust and direction of the information clearly show a much improved understanding of the requirement for key information for day-to-day management, for results measurement and also for future planning purposes for both Revenue Canada and the Department of Finance. Quarterly reports and business plans, for example, have improved in scope and now include much more meaningful information.

Overall, both departments are working very co-operatively at both operational and senior management levels to address the information deficits outlined by the Auditor General in his 1994 Report. Significant improvements have already taken place and additional improvements are planned. However, it will likely be sometime yet before Revenue Canada is able to provide assurance that information requirements can be fully met with comprehensive and accurate data.

Policies and Procedures

Policy development and interpretation have improved significantly. Organization, procedures and systems have been severely tested recently by a large workload of poor-quality claims, but have adapted to provide best practices and service under the circumstances. However, the level of service to claimants has been compromised for the moment.

Prior to the TPR bulge, delivery was not under continual stress as workload, scope and quality of claims were manageable within existing service standards. However, normal delivery became seriously skewed as a result of the deluge of TPRs received by Revenue Canada in response to the February 1994 budget which restricted retroactive filing. By September of that year, the equivalent of an additional three years of work had been received. This additional workload had immediate resource implications and also brought with it a significant increase in problem claims primarily due to lack of supporting documentation. Original strategies for dealing with these TPRs were rapidly modified as soon as the size, extent and particular difficulties of the bulge were understood. The original goal of reviewing every claim in complete detail, for example,

was recognized as too time-consuming and generally unnecessary for established clients with good track records. Risk assessment strategies were therefore developed in offices to enable detailed reviews to be focused where they were most needed. This simultaneously made the best use of limited resources and optimized service to established clients.

During this time frame, a number of new Directives and Application Policies were developed and issued to provide more guidance to the field in delivering the tax support. These are wide-ranging in nature and add substantially to those already in place in terms of scope and extent of detailed explanation. These Directives and Application Policies have been well received by field staff. They provide additional direction and help standardize the delivery of the SR&ED tax support.

They also help establish a balance in regard to the field office empowerment process which had taken place in 1992. Revenue Canada recognized that a necessary step in improving client service was to empower offices to tailor their delivery to fit more closely to client requirements. This was planned for all the department's audit activities, including those for SR&ED. Empowerment has given field offices a great deal more autonomy than in the past and these offices now organize and run their businesses in the way that they judge best suits their clientele, local conditions and knowledge. Although the empowerment strategy works well and allows local offices to respond rapidly and appropriately to local needs, the need to promote and sustain consistent delivery is supported by common policies which lay out broad guidelines or, when necessary, detailed guidance on dealing with specific situations.

> *Update: In February of 1997, Information Circular 97-1, Scientific Research and Experimental Development: Administrative Guidelines for Software Development was released. These guidelines were developed in partnership with the software development industry and have the full support of that sector. In addition, information seminars explaining the application of the policy were held across the country after the release of the paper.*
>
> *A similar consultative format is currently being used to revise Information Circular 86-4, Scientific Research and Experimental Development – the general information circular on SR&ED. This consultation process will include review by a large number of specialists from a wide range of industry sectors and posting draft versions of the guidelines on the Internet for public comment.*

While there are variations between offices in procedures and organization, no practices or procedures were identified during the field visits that clearly failed to support the goals of the tax incentive or that could actually work against them. In fact, whatever latitude there may formerly have been for irrelevant or counter-productive activities has probably been eliminated by the landslide of TPRs. This landslide sharply focused attention on how well the activity was being delivered through then-existing practices and procedures. Each office was forced to re-evaluate its working methods to ensure optimum effectiveness in the face of an unavoidable decline in the level of client service. As a result, additional resources were obtained, innovative new processes and procedures were tested, training courses were revised and work flows reorganized. Duplication was eliminated and most, if not all, innovations were sufficiently successful to secure the best level of service possible under the difficult circumstances.

Despite the rapid response to the changing workload, it was impossible for Revenue Canada to maintain the pre-bulge level of client service during the height of the TPR deluge. It was timeliness in processing claims, particularly with the science review, where service standards slipped. This had immediate negative effects on the refundable segment of the SR&ED claimant population, although they were accorded as much priority as could be given with a limited resource base that proved difficult and time consuming to enlarge. The science review became a bottleneck that remained to some extent well into 1996.

While still facing the formidable problems of size and quality of workload, as well as heightened client sensitivity, the tax incentive is certainly running better now than ever before and its procedures remain under a continual process of performance tuning. As it emerges from this abnormal and difficult period, Revenue Canada and its SR&ED clients can expect to be left with a much improved delivery process, significantly better in terms of both service and consistency.

Client Service

1) Scientific and Financial Review

The scientific review and audit verification processes work better, in terms of securing compliance, than is generally perceived. The processes and criteria are appropriate and, given full claim information, neutral in application.

Given the problems of the TPR bulge, the science review process is working fairly satisfactorily, applying eligibility criteria that are recognized and used internationally. Some clients have difficulty accepting these criteria as valid when all, or some of their work, fails to meet them. They may believe that science advisers have more discretion in applying criteria than is, in fact, the case. Nonetheless, there still is, and likely always will be, some portions of complex cases where it is very difficult to decide on eligibility and, in such cases, Revenue Canada may be open to criticism. Much of the criticism levelled at Revenue Canada is anecdotal in nature and not supported by written complaint, formal objections or appeals against science decisions. Criticism may therefore be accorded unjustified importance, given the absence of good data to counter perception with fact.

The review process is not, of course, without its problems. But most of these are seen to fall clearly within the operating parameters of a process that always has, and likely always will, require some degree of judgement. Although this need for judgement arises for a variety of valid reasons, it has the result that the process cannot be made completely objective and cannot always perform exactly to some ideal level of precision. The typical problems of the science review are described by science advisers as incomplete or inadequate project descriptions, the complexity of the legislation and the sophistication of much of the science work itself. These problems can slide the review into areas where interpretations are complex and where detailed guidelines may not exist or are grey in nature.

Complex problems encountered in the review process are carefully examined, case by case, first by peers, then by local offices and, where necessary, by management at Headquarters. These problems are handled in a way that seeks to develop a solution that offers as much support to the client as is consistent with Revenue Canada’s obligation to protect its own integrity.

Update: The department is currently addressing consistency concerns by engaging national sector specialist co-ordinators who will also act as key contact points with industry associations. These specialists will ensure that the sector is covered by a team of well-qualified reviewers and they will develop strategies to provide consistent application of the criteria and treatment of claimants within their sector. A number of these specialists will be part of an interchange program with industry.

One important response to workload pressures was increased budgets to allow for increasing use of external consultants for the science review process. During the early stages of the TPR bulge, this caused some problems mainly relating to "new" consultants' lack of knowledge of the tax incentive, its governing legislation and general orientation with Revenue Canada's administrative philosophy. Lessons had to be learned and applied quickly on the training, mentoring and control of the external consultants who have, for the most part, served the tax incentive well. The use of external consultants is not without debate both inside and outside Revenue Canada but most opinions agree that, overall, the use of external consultants of known calibre is very advantageous as long as the appropriate checks and balances are in place. Their employment and lack of ongoing relationship with clients may have actually served to hasten the move to improving compliance.

Update: New science staff who are not familiar with the administrative procedures of the tax incentive will be given the staff training program. In addition, the sector specialists, who will develop quality assurance programs, will determine if there is a requirement for workshops and/or training for science staff in their respective areas of expertise.

For financial audit, the techniques, tools and practices of cost verification are well established and accepted. As far as the verification process is concerned in the SR&ED tax incentives, there are no doubts among the auditors about the necessity of some level of audit for a large majority of claims. In the normal process, once science advisers confirm project eligibility, it is a given that there are qualifying costs for the auditor to verify. Generally speaking, with proper case documentation and project tracking, the financial audit process can be seen as a fairly prosaic process. However, the practical application of audit technique has become particularly difficult over the past couple of years. Auditors report that many clients now apparently deliberately increase the burden on Revenue Canada of identifying truly qualifying expenditures, by the simple expedient of throwing into the claim – for the auditor to find and cut – everything that looks like it might be remotely related to the qualifying work.

Not all clients are overclaimers; consequently many well-established clients, often with relatively small claims, are dealt with very quickly with only minimal verification. But the number of claims that can be so handled dropped from nearly 30 per cent in 1994-95 to about 20 per cent in 1995-96. Auditors have reported that the ethical rules of composing the claim are being widely ignored and that the envelope is constantly being pushed, often to a ludicrous extent. In one example, a claim was originally submitted at $250,000, and was inflated by an accountant to $3,000,000 and then further inflated by a tax consultant to $5,000,000. Subsequent review and audit reduced it to its original figure.

This essentially non-compliant approach is said to have several causes that may sometimes be linked: the emergence of aggressive consultants whose financial compensation is directly linked to the size of the claim; the absence, especially in TPR bulge claims, of supporting information which can tempt clients to claim everything, knowing that their claim will be reduced anyway; and the recognition that Revenue Canada's requirement for improved compliance has changed the previously understood "rules", thus leading to inflated claims in order to "win" as much as possible.

The TPR bulge, with its particular problems, will disappear over time because of the sunset clause in the legislation. In the interim, audit practice has evolved to deal with eligible, but poorly supported, earlier year claims. In order to improve future claim quality, audits include a strong comment, usually in writing, to the client that next year's current claim must meet record-keeping requirements or the audit attitude will be tougher. Time alone will show how much effect this approach will have, but it is obviously the best option to adopt until the bulge has been eliminated. In the meantime, although audit techniques and tools are well known and of proven performance, there will be variations between offices in those cases where decisions on cost eligibility come down to negotiation and personal judgement, even with new guidelines being issued all the time.

2) Service Standards

In general, delivery of the SR&ED tax incentives is functioning well. Legislative changes caused the sudden addition of an extra three-year workload of poor quality claims with immediate implications for resource levels and delivery practices which in turn have impacted on timeliness in the processing of claims.

The number of claims for tax support for SR&ED work has been increasing steadily over the years with the administrative function continuing, overall, to work satisfactorily. Changes were made as required to staffing levels, organization and operational practices to respond to the size and nature of the workload. These changes included decentralizing the science review function to place it closer to the claimant base and strengthening the verification function to meet changes in the scope and quality of claims.

However, when legislative change precipitated the TPR bulge, an urgent need arose for immediate action to be taken within Revenue Canada as a response. The activity was provided with some additional resources and was able to augment the financial audit staff by reallocating internal audit personnel. The science complement, on the other hand, could only be increased through the external staffing process and this was time-consuming for two reasons. First, the external recruiting processes have been particularly slow in government for some time and second, because the positions were temporary two-year terms, it proved very difficult to attract suitably qualified people into Revenue Canada. Long before new science staff began to come on board, local offices began to make a number of adjustments to their work plans and processes to address the increased workload, including the increased use of external consultants.

Update: The department is staffing new science positions with industry specialists, including industry interchanges, as mentioned above. Sixteen areas of specialty have been identified; each will have a key sector specialist who will act as a liaison with industry and other qualified reviewers. In order to implement a pilot for this initiative, present staff will be appointed to act as interim specialists and, over a two-year period, additional sectors and specialists will be added. Hiring on a permanent basis for the department is made more difficult because the available positions are for two-year terms and many qualified industry specialists are not interested in short-term positions.

A major impact of the TPR bulge claims was an increase in the number of files not processed within the 120-day target. In March 1996, 27 per cent of the refundable inventory was beyond the 120 days as compared to only 9 per cent in March of 1995. For non-refundables, the total was 22 per cent in 1996 compared to 2 per cent in 1995. This problem of timeliness has a serious impact on the refundable sector of the claimant population, particularly for those firms with cash flow problems.

Update: By March 1997, the inventory of refundable claims beyond 120 days had reached 36 per cent; non- refundables were at 35 per cent. However, the number of refundable claims accepted as filed and processed within 60 days had increased slightly, from 46 per cent in March of 1996 to 49 per cent in 1997. The number of refundable files completed in 1996-97 was 42 per cent; an improvement over 1995-96 which was 38 per cent. Improved reporting on the management of files became available in 1996-97 with new system software.

In the survey of clients, timeliness in processing claims received the lowest satisfaction rating with a mean of 5.2 on a scale of 0 to 10. Timeliness in providing information received 6.3 while the clarity of forms and guidelines received a 5.9 rating. The "overall" level of service was rated at 6.4. Apart from timeliness in processing claims, the rest of these scores can probably be seen as fairly reasonable, given the necessarily invasive verification role of Revenue Canada and the problems of the TPR bulge which were occurring when the survey took place.

The 27 accounting and consulting firms surveyed also gave a low rating for the time taken to process claims. Eleven rated the process as "poor" and six more ranked it as "very poor". However, the timeliness of answering requests for information was generally good, with five firms rating the service as "very good." The clarity of forms and other publications was also generally considered to be good. The majority felt that Public Information Seminars were "good" or "fairly good," although nine of the 27 companies had never attended one.

Update: During recent consultation with clients, the department confirmed the priority of getting the refundable tax credit back to clients since this is often critical for an organization's day-to-day viability. As a result, the Minister's announcement in April 1997 included a commitment to refocus personnel to achieve the 120-day service standard.

The quality of a claim directly determines the level of work that Revenue Canada must give to the claim. Quality in this context refers to the completeness of the claim and the ability to accurately verify, from claimants' records, the accuracy of the claim. Some deterioration in claims quality had been noted prior to the TPR bulge but, in the bulge itself, there appeared a large percentage of very poor quality claims that were difficult, complex and in many cases impossible to fully verify. In addition to increasing the time needed to process such claims, there were two other related impacts. The first was the need for all such TPR claims to be reviewed and at an increased level of scrutiny. The second was that, as a consequence, more claims were refused or reduced with obvious effects on clients' expectations and their working relationship with Revenue Canada. Many clients and their representative organizations perceived an unwritten agenda to use stricter verification in both the science review and the financial audit to reduce the costs of delivery. There is in fact no such agenda but it is clear that an improved level of verification was, and will likely continue to be, necessary in order to assure compliance with the legislation.

3) Consistency in Claims Treatment

Consistency of treatment is a constant challenge in the processing of claims. Several initiatives have been put in place – and more are planned – to maximize consistency but continuous and complete consistency is difficult to achieve.

Many clients and their representatives have taken issue with Revenue Canada on the grounds of inconsistent treatment of their claims over time. The disputes range from disagreement on the eligibility of some fraction of a particular cost to, at the other extreme, the complete disallowance of a claim that received tax support in previous years. The case-by-case nature of each claim makes generalizations meaningless and, in any given case, only an individual re-review can allow a decision on the true level of inconsistency to be judged. While Revenue Canada staff in individual offices are confident that their specific files have only minor variances from each other, there is a perception that more serious inconsistencies can arise nationally. This has allegedly been noted between regions by members of representative associations and there are instances known to Revenue Canada. Consistency of treatment is a major concern in all offices, with surveyed clients generally more concerned about the science review than the audit process.

Each office has practices in place to try and ensure that science decisions on eligibility are consistent. These include selective file assignment, management review, peer review and local criteria to determine the depth of review needed. Headquarters' initiatives have included general and sector workshops, quality assurance reviews, the issue of more and improved directives and the use of specialized consultants on a national basis. Nonetheless, the science decision process still retains an element of subjective judgement in some cases and therefore some inconsistencies can always be expected. However, given the experience curve of the past few years, the level of sensitivity on this subject and the extensive initiatives taken to make corrections, it seems probable that inconsistencies in present and future science decisions will likely be less frequent and less extreme than was previously possible.

Update: The imminent hiring of industry specialists who will be located close to the industry's locale, who will liaise with the sector and who will ensure that qualified reviewers are consistent and current in their area, will provide a much improved level of consistency than has recently been experienced by some taxpayers.

Achieving and maintaining consistency or treatment in the audit process is also a major focus with individual offices working to achieve the highest possible level of consistency in fulfilling their verification responsibilities. Offices conduct peer and management reviews, and detailed consultation on complex cases. On a national basis, recent initiatives have included an excellent new training course, new policies and directives and enhanced local quality assurance reviews as well as a separate Headquarters quality assurance project. But auditors also agree that 100 per cent consistency of treatment is impossible and that the inexact and judgemental nature of the allocation of costs to the SR&ED process in complex claims makes it very difficult for even would-be fully compliant clients to be completely accurate.

The most common verification problems with claims, especially in the TPR bulge, are the lack of supporting documentation for costs, the inaccuracy of available documentation and the difficulty of reconstructing the project steps, progress and costs, after an interval of several years in many cases. Factors like these pave the way for at least minor inconsistencies in treatment. To a considerable extent, and quite separate from the specific TPR problems, the very nature of SR&ED research and the personnel who conduct it, do not easily lend themselves to the creation and maintenance of neat project progress trails with carefully recorded advances, reversals and associated costs meticulously identified and recorded. Consequently, where poor claim support is a significant problem, the result often is that the only way to finalize a claim is through a negotiation process. Frequently, both auditors and clients walk away from this negotiation process mutually dissatisfied. Revenue Canada continually encourages clients to improve record-keeping by explaining in discussion and in writing the needs of the verification process.

4) Clients' Perspectives

Although there is much anecdotal material about client discontent with the administration of SR&ED tax support, there is no real evidence to support contentions of serious, ongoing client discontent.

In an activity where hard data are not easily available to offset, balance or simply contradict misperceptions or rumours, it is to be expected that the negative aspects of delivery are in the forefront of discussion. Information on perceptions of inconsistency were sought from client surveys and Revenue Canada's files dealing with Notices of Objection and Appeals processes as well as ministerial mail. While these confirm that there are problems, they do not suggest that they are any larger or more serious than the normal volume and type of problems to be expected from this type of activity – even with its serious overload of work.

In the science review, individual clients are likely to become aware of inconsistency only on a year-to-year basis and exact comparison can be difficult as their SR&ED work changes over time. The responses of corporate survey participants about the consistency and helpfulness of the science advisors are provided in Table 4.2. The table reveals that their responses were fairly positive. No significant differences were noted between firms with large and small claims.

Table 4.2
Consistency and Helpfulness of Science Advisors: Corporations
(percentage of respondents)

Consistency		Helpfulness	
Very consistent	34	Very helpful	44
Fairly consistent	41	Fairly helpful	34
Not very consistent	12	Not very helpful	10
Not at all consistent	7	Not at all helpful	9
No response	6	No response	4

Source: Abt Associates of Canada (1996a)

Table 4.3
Consistency and Helpfulness of Science Advisors: Accountants and Consultants
(number of respondents)

Consistency		Helpfulness	
Very consistent	0	Very helpful	1
Fairly consistent	8	Fairly helpful	11
Not very consistent	7	Not very helpful	4
Not at all consistent	5	Not at all helpful	4

Source: Abt Associates of Canada (1996a)

The 27 accounting and consulting firms surveyed indicated that they represent a total of about 2,000 clients. These firms, which have a broader experience of working with Revenue Canada, presented a very different picture on the consistency and helpfulness of science advisors. Their responses to these survey questions are provided in Table 4.3. Seven of these firms surveyed indicated that they had no contact with science advisors.

Commenting on the consistency of science advisors, most (12) of the accounting and consulting firms felt that advisors were not always consistent in their reviews. Almost all of these 12 cited examples of similar projects that were treated differently to some extent. Several respondents indicated that the rules may be applied differently in different regions and that external consultants were more "strict" than Revenue Canada employees.

Commenting on the helpfulness of science advisers, only one firm thought they were "very" helpful and 11 said they were "fairly helpful". The remaining eight equally rated the science advisers as either "not very helpful" or "not at all helpful". Examples of "unhelpful" behaviour included "inflexible stance" taken by science advisers. There was also concern expressed about lack of experience in clients' specific industries. Science advisers (and auditors) are well aware of client discontent. They generally hold a pragmatic view that discontent results from better quality work on their part in improving compliance, particularly with the very poor quality claims, and they believe that it will disappear in due course as improved compliance becomes the norm. Revenue Canada's numerous responses to addressing problems of inconsistency, as discussed in the preceding section, are already having a positive impact on the science review process. Claimants, too, are becoming better educated about the SR&ED tax incentives through experience and recent administration guidelines issued by Revenue Canada.

The responses of corporate survey participants to a question on the consistency of financial auditors are provided in Table 4.4. The responses of the accounting and consulting firms surveyed on the consistency and helpfulness of financial auditors are provided in Table 4.5.

Table 4.4
Consistency of Financial Auditors: Corporations
(percentage of respondents)

Very consistent	44
Fairly consistent	35
Not very consistent	11
Not at all consistent	5
No response	5

Source: Abt Associates of Canada (1996a)

Table 4.5
Consistency and Helpfulness of Financial Auditors: Accountants and Consultants
(number of respondents)

Consistency		Helpfulness	
Very consistent	4	Very helpful	8
Fairly consistent	12	Fairly helpful	14
Not very consistent	9	Not very helpful	3
Not at all consistent	1	Not at all helpful	2

Source: Abt Associates of Canada (1996a)

Field offices have not found it necessary to set up special files for complaint correspondence and most did not have any awareness of any significant number of complaints being received in writing. Ministerial correspondence gives little support to any contentions of serious problems. The volume of letters relating to the SR&ED tax incentives received at Headquarters is quite small – usually not more than 100 per year. Overwhelmingly, the main topic is time delays in processing claims. At least 80 per cent of letters are complaints on this theme. Other major topics reflect the current issue of the day. For example, the legislation which restricted filing for prior-year claims resulted in some taxpayers asking for an extension to the deadline. There are complaints on the processing time for TPR claims. Press reports in December of 1994 regarding large claims by financial institutions prompted letters usually containing editorial-type comment on the situation. The most recent common topic in ministerial correspondence has been the Quebec tax shelter issue. Most letters must be dealt with on a case-by-case basis. Little useful analysis can be done on content as the topics can vary widely and generally reflect current issues.

While significant client discontent must always be taken seriously, any such discontent that is based on genuine belief of unfair treatment or inaccurate work could be expected to produce more than expressions of discontent. Clients or their agents have options open if they are dissatisfied with a science review – first by dealing and discussing with the local office (this happens often), then by lodging a Notice of Objection and finally by a formal Appeal to the courts. Irrespective therefore of whether the science review or verification function has changed in "severity", if clients believe that truly qualifying work is being rejected, there should be a significant increase in Notices of Objections and Appeals. But this is not the case.

From 1992 to 1995 inclusive, there were only 811 objections filed and 88 appeals. During this same time period, there were nearly 60,000 claims filed and 39,000 claims settled. While there was a yearly increase in the number of objections filed, the ratio to claims reviewed remained constant at about 2 per cent, with objections being filed mainly for expenditure as opposed to scientific eligibility reasons. This 2 per cent ratio is very low in comparison to Revenue Canada’s other audit activities.

The disposal of objections raised for SR&ED costs does not highlight problems with the delivery. Almost 58 per cent were settled with the taxpayer’s agreement with disposition primarily granting the objection in full (25 per cent) or in part (55 per cent). Of the 42 per cent of disposals made without the taxpayer’s consent, 75 per cent confirmed the original decision of the assessment. Only 10 per cent of objections went on to be appealed. A subsystem, with current information, is maintained at Headquarters for objections lodged against science decisions on eligibility. Analysis of its data also showed few concerns with the delivery. From October 1994 until April 1996, 76 per cent of the 89 objections reviewed, agreed with the original decision. Thus, while some taxpayers may not like the initial outcome of their claim, subsequent review shows that the first decision was generally upheld. Only 3 per cent of objections against science decisions have gone on to formal appeal.

5) Awareness of SR&ED Tax Support

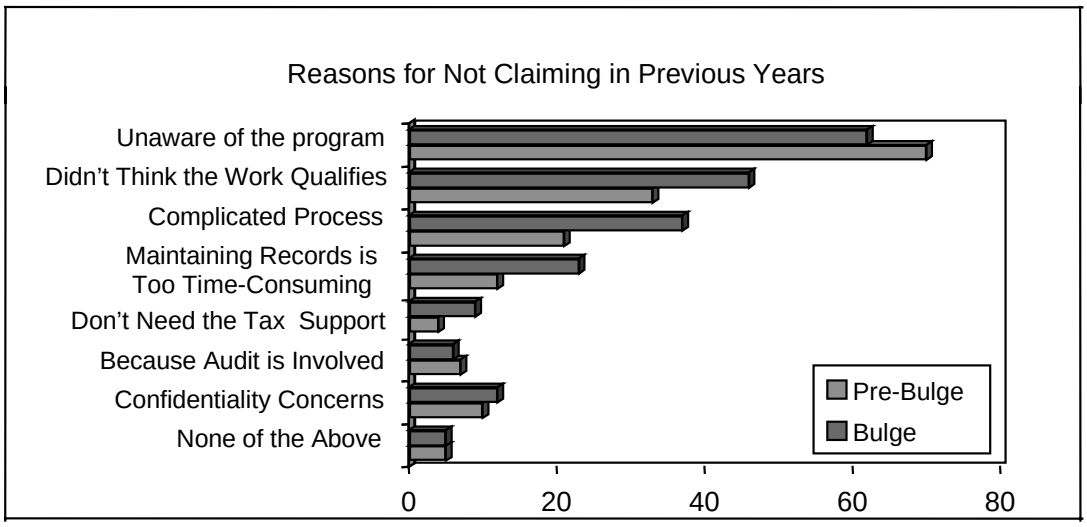
Although major efforts have been made to communicate the existence of tax support for SR&ED work, many performers of qualifying work were unaware of the availability of that support and some may still be unaware.

Qualifying SR&ED firms that are not aware that they are entitled to tax support are obviously at a disadvantage. The curtailing of retroactive claims filing attracted a lot of publicity which, in turn, generated a wave of SR&ED consultants seeking qualifying clients whose claims had to be filed within a specific time. These clients are, of course, in the TPR bulge and analysis of data bases showed that about 70 per cent of the sample of the TPR bulge clients are new names to the system. This is a very high percentage which suggests that there is, or at least was, a significant percentage of the SR&ED community that were not claiming tax support for one reason or another.

As a result of this finding, Abt Associates were contracted to conduct a survey of a sample of 200 SR&ED new claimants, evenly split between bulge and pre-bulge populations with a further split between refundable and non-refundable clients. The thrust of the survey was to discover why these qualifying clients had not previously applied for tax support.

All of the respondents qualify for tax support and over 93 per cent are CCPCs. Most TPR claimants, both bulge and pre-bulge, responded that they did not claim because they did not know about the tax incentive. The next largest category did not claim because they did not think that their work qualified while a third category had previously decided not to claim because of the "complicated process". Figure 4.1 gives the detail for both bulge and pre-bulge TPR claimants. It confirms the need for existing and new methods of communication to be continually employed to ensure that potential clients are aware of the availability of tax support.

Figure 4.1



Source: Abt Associates of Canada (1996b)

Unfortunately the arrival of the bulge and its impact on resources caused a sharp drop in the number of SR&ED information seminars offered. However, this was likely offset by the increased activities of the SR&ED consulting community to publicize the tax incentive and to encourage eligible businesses to submit claims. The number of seminars offered by Revenue Canada is being increased as the workload returns to normal levels.

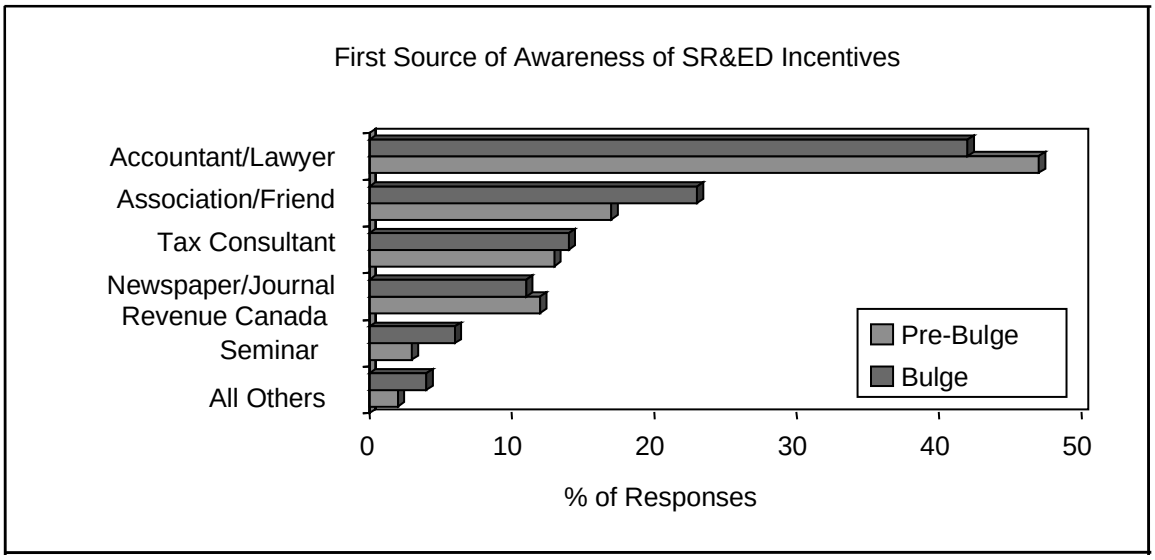
> *Update: The department is focusing on promoting the tax incentive and providing more information to claimants through an Outreach Program. This will include opening new offices, providing public seminars, increasing availability of staff to answer telephone enquiries, closer partnerships with industry associations and greater use of the Revenue Canada Internet site. The Internet site will also be expanded to link to other government and scientific sites.*
>
> *A new initiative, known as Science Access, is a group of advisory services which will help, in particular, new claimants who are not certain of eligibility requirements, what data needs to be captured and other aspects of making a claim. The services include public seminars, individual taxpayer education, first-time claimant service and a Preclaim Project Review (PCPR). This review will provide up-front certainty about the eligibility of projects either before they are started or once they are in progress. This optional service will help claimants know what must be included to submit a complete claim – rather than trying to reconstruct documentation after the project has been completed. This pre-approval for projects is subject to a final audit to verify the work done and the costs incurred.*
>
> *Another initiative under consideration is to look at ways to pre-file Form T661 in advance of the complete tax return in an effort to streamline the delivery of the tax credit.*

Revenue Canada staff and external interviewees were asked how it could be that so many firms might not know about the SR&ED tax incentives. A major point of agreement is that many small firms discuss detailed financial and accounting matters only once or twice a year with the firm's accountant, who is typically external and not an employee with intimate knowledge of the firm's activities. There is also a strong perception that many smaller accounting organizations are, or at least were, unfamiliar with the tax incentive themselves and therefore could not introduce it to their clients. The profession's awareness of the availability of SR&ED tax support is thought to have jumped sharply as a result of the 1994 budget announcement and the subsequent publicity, as the following data suggest. Consequently, for the future, there may be still be considerable potential here for Revenue Canada to work with accounting organizations in promoting the tax incentive to everyone's ultimate advantage.

> *Update: The Outreach Program to promote the SR&ED tax credit will specifically target accountants and accounting firms to ensure that they know about and understand the benefits and eligibility requirements of this incentive.*

In the survey of new clients, respondents were asked from which source they first learned about the SR&ED tax incentives. Figure 4.2 shows that most learned through accountants or lawyers.

Figure 4.2



Source: Abt Associates of Canada (1996b)

The majority of new clients (46 per cent pre-bulge, 43 per cent bulge) had used external accounting firms to prepare their claims. The second most common method of preparing claims in both groups was to use an external tax consultant.

The survey cannot distinguish between different types and calibres of tax consultants, but it is widely recognized that a significant number operate on a contingency fee basis and may lack the appropriate skills to prepare high quality claims. Whatever the reason, many claims received over the period of the bulge are seriously overinflated, with an aggressiveness that at least borders on fraud. Field staff generally estimate that although only about 10 per cent of the claims are prepared by these consultants, their impact on the delivery of the tax incentive is quite disproportionate to their number. The same group is also perceived as being responsible, in a spin-off effect, for a general deterioration in claim quality by forcing other firms to be very aggressive in order to appear competitive.

There is a widely held expectation that the extent of Revenue Canada’s review coverage, coupled with improved compliance enforcement, will ultimately control and reduce the present level of aggressiveness. Field staff have noted many instances where consultants have withdrawn aggressive claims entirely while, in other instances, the consultants have allegedly been taken to task by claimants for potentially getting them into Revenue Canada's bad books through inflated claims. On the other hand, many consultants, and perhaps especially the more aggressive ones, have rendered a real service to the SR&ED community through their vigorous pursuit of new business, thus securing tax support for many new clients who, for one reason or other, had not previously claimed.

The issue of the volume of new clients has a long-term implication for Revenue Canada. Overall, about 86 per cent of surveyed new claimants intend to apply for SR&ED tax support in the future. Of the small number of firms that do not expect to apply for tax support in the future, many reported that they no longer conduct SR&ED activities; others stated that they found the process “too complicated”.

Consultants and accountants were asked to identify what they believed to be the most difficult tasks in claim preparation. Almost all of the respondents commented specifically on the problems associated with accurately carving out SR&ED eligible costs, or portions of costs, from other activities. Mostly this related to labour, equipment and materials partially used in SR&ED. Much of the difficulty was identified as having its root in poor record keeping. The next greatest area of difficulty was identified as knowing what work is eligible for tax support, that is to say, whether all, none or some of a project in fact meets the eligibility criteria.

6) Costs of Complying

The costs of complying with the requirements for securing SR&ED tax support vary significantly depending upon the size of a claim and may, in some cases, present an obstacle to participation.

Excessive compliance costs can constitute a serious obstacle to securing tax support for qualifying SR&ED work, especially for smaller clientele. The term compliance costs is intended to cover not just the physical preparation of a claim, but also the background work associated with project set-up, organization, cost recording, etc.

The survey also addressed the question of compliance costs. Corporate respondents indicated that, on average, these costs accounted for nearly 11 per cent of the value of their claims for SR&ED tax credits in 1994. This ranged from 8 per cent for firms with large or medium claims to 11.3 per cent for firms with small claims. Most firms did not apparently find this level of cost excessive. Asked about the amount of information required to support their claims, 67 per cent of corporate respondents thought the amount of information required was about right. However, 60 per cent of firms with large claims and 58 per cent of firms located in Quebec were a little less inclined to agree. Some concerns were raised about the complexity of the information, with 14 per cent of corporate respondents describing the information and documentation requirements as "very complex" and 52 per cent, as "fairly complex". The largest claimants were most likely to report complexity.[50]

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50 Gunz et al (1996) also conducted a study on compliance costs for a relatively small number (51) of corporate SR&ED claimants located in Ontario. The study revealed that compliance costs were quite low on average, at 0.7 per cent of the value of SR&ED tax credits claimed by these survey participants. Based on this finding, the study concluded that the administrative structure for delivering this support would appear to be cost-effective. However, while average compliance costs were found to be low, the study also found that firms with tax credit claims under $200,000 have compliance costs of 15 per cent or more. It, therefore, suggested that: i) there could be some discouragement effect on research and development activity for firms which claim relatively small amounts of SR&ED tax credits; and ii) tracking current costs and completing forms represent a greater burden for smaller firms. In addition, the study found that start-up costs approximate (or are slightly lower than) annual compliance costs. For purposes of comparison, the study gathered somewhat more limited information on compliance costs associated with grants. This information revealed that these were also low on average at 2 per cent of the value of grants received, but exceeded the compliance costs associated with the SR&ED tax credits.

Accountants and consultants surveyed provided estimates for both start-up and ongoing compliance costs. Their responses are provided in Table 4.6 and indicate lower compliance costs than the estimates provided by corporate respondents to the survey. Cost estimates provided by consultants tended to be higher than those given by accountants. However, consultants were usually more involved in the technical assessment and documentation process, implying that they may have been dealing with more complex cases. Accountants and consultants believe that the major obstacles that prevent clients from claiming, or from getting approval for total amounts claimed, were poor record-keeping systems and the difficulty in determining what qualifies as SR&ED.

Update: The department recognizes that the cost of compliance for small business is considerably greater than for claims from large organizations, and that for some small businesses the costs may be considered too high. The Department's response is to develop a streamlined and simplified Form T661 (not yet issued) which will be faster and cheaper to complete and which will also capture information for one of Statistics Canada's surveys – thus eliminating duplication. This response will directly benefit some 8,000 companies in Canada as well as relieving them of additional paper burden.

Table 4.6
Costs of Complying: Accountants and Consultants
(percentage of SR&ED tax credits claimed by respondents)

	Start-Up Year	Ongoing Years
Small claims (less than $100,000)	21%	15%
Medium claims (between $100,000 and $500,000)	13%	10%
Large claims (more than $500,000)	8%	5.5%

Source: Abt Associates of Canada (1996a)

Summary

Administration of the SR&ED tax incentives has undergone dynamic change in the past few years and will continue to evolve for some time into the future. Change has brought about negative and positive impacts. Recognition of the need for enhanced compliance has negatively affected some clients but, in the longer term, protects the tax incentive for the compliant segment of the SR&ED population. Overall, the quality of delivery has improved significantly and as the workload normalizes, improved levels of service, particularly timeliness, can be expected.

By its very nature, administering the SR&ED tax incentives presents Revenue Canada with an apparent dichotomy made possible by the latitude for interpretation that exists in both the science review and the audit verification processes. It is commonly reported, for example, that in its earlier days, exact compliance with the legislation was not always seen as a prime goal of every science review or audit verification. There was – and to some extent there still is – an unresolved tension caused by two major and different ways of interpreting the thrust of the incentive. These differences become goals of, on one hand, "giving money to a great cause" and on the other, of "controlling a potential cash grab". During the early days, maximizing the tax support to small struggling companies and thence benefiting the Canadian economy directly and downstream, was often seen as a deciding factor in problematical cases.

Prior to the legislative changes of 1994, delivery of the SR&ED tax incentives continued to develop, but changes in its makeup began to appear. These included volume growth, increasing expertise on the part of clients and Revenue Canada, the appearance, initially at a low level, of aggressive claims and an accelerating growth in the level of tax support being sought by the larger non-refundable clients. A major organizational change was the decentralization of the science function. It cannot now be established with any precision, but decentralizing the science function almost certainly initially had impacts on eligibility acceptances, on the consistency of science decisions and on the previous cohesiveness of the science function. There is no clear, hard information – only opinion – on whether the delivery of the tax incentive and its clients are best served by a centralized or decentralized science function.

> *Update: The reorganization of science advisors by sector as opposed to region will result in a more centralized function. The sector specialists will report to Headquarters in Ottawa to ensure that maximum consistency in the science review process is achieved.*

Introducing a sunset date for retroactive claims precipitated the huge increase in workload and accelerated the thrust to develop better, smarter ways to deliver the SR&ED tax incentives. A major factor, as previously discussed, has been the change in claim quality, forcing a swing towards increasing the level of compliance with the legislation. Part of this is an increased attention to those areas – notably software – where precise guidelines on eligibility were needed. Field staff confirm recognizing the need for enhanced compliance but they also agree by and large with clients' comments that the shift towards greater compliance, although real, took place largely unannounced. But even after a couple of years of improving compliance and consistency of treatment, there is still enough genuine latitude in interpretation to permit opposing viewpoints on eligibility and cost content to be sincerely held and defended.

Some clients – usually small and without in-house financial skills, have had to weather the consequence of sharply reduced tax support. Consequences are reported such as reduced SR&ED, reduced employment, reduced support from their bankers and, in extreme cases, closure of the company. As one member of a representative organization put it, in delivering "generously" in the early days and then swinging to seek full compliance, Revenue Canada did itself and a small number of clients a disservice.

Another unfortunate but probably unavoidable impact of change has been the alienation of a great many clients. The relationship with Revenue Canada is now more often seen as adversarial compared to the earlier collegiality, now lost, probably forever. Field staff also comment that many of Revenue Canada's "better" clients are resentful of less scrupulous claimants whose bad and greedy claims they perceive as threatening perhaps the very existence of the tax incentive.

Clients seem to expect the SR&ED tax incentives to change – but they do not know what to anticipate until the supposed agenda becomes public. Their worst scenario is complete cancellation of tax support for SR&ED work. Representative organizations report that the incentive is perceived to be "bleeding" in that it is thought to be costing much more than was ever "foreseen" or intended by government and that in consequence there is at least an initial and unwritten agenda within government, and tasked to Revenue Canada, to reduce the expenditure. There is of course no such agenda within Revenue Canada. However, some impact of this perception, in terms of reduced or postponed research, is said to be occurring. The postponement is said to be made on the basis that planning for new or continued research into the future requires predictability and stability of financing and that, without those factors, much marginal research will never be undertaken.

There are many administrative initiatives still developing for the delivery. They are not exhaustively defined here because of their inherent volatility and because, over time, some will disappear and other new initiatives will appear. Most of the work in hand has the characteristics of fine tuning being applied to an activity that is maturing rapidly rather than those of dramatic changes in direction. The principal thrusts are: finalizing the TPR backlog; moving towards better levels of compliance; enhancing and facilitating voluntary compliance in the future; increasing internal awareness of the need for consistency and providing mechanisms to secure it; refining the quality assurance processes; improving the range and quality of data capture and processing; and producing improved guidelines.

Delivery of the tax incentive is emerging from an extremely difficult and testing period. The changes already made, and those under implementation and planned, already promise a better managed and delivered activity for the near future. The result of a 1996 independent polling of members by a large industry association concerning the delivery of the SR&ED tax incentives, included a strong endorsement for the present direction of delivery. Members noted that they were experiencing a more congenial atmosphere overall; that staff were more proactive and that customer service was very apparent.

> *Update: The enhanced approach to client service – the Outreach Program and Science Access will go a long way to improving the administrative features of a tax incentive that, for many taxpayers, is already seen as the best of its kind in the world. The expanded resources include 90 new science advisors and 55 financial auditors.*

Annex I
PROVINCIAL INCOME TAX INCENTIVES FOR RESEARCH AND DEVELOPMENT

All provincial and territorial governments provide income tax deductions for research and development. The provinces of Manitoba, New Brunswick, Newfoundland, Nova Scotia, Ontario and Quebec also offer various types of additional income tax incentives for research and development conducted within their borders. This annex reviews these provincial tax incentives; they are summarized in Table A1.1. The final section examines the relative incentive to invest in research and development provided through the federal and provincial income tax systems.

Income Tax Deductions

Provincial and territorial governments provide full deductibility for eligible current and capital expenditures on qualifying research and development. Provincial rules generally follow federal rules relating to the definitions of qualifying work and expenditures, and the treatment of government assistance, non-government assistance and the federal SR&ED tax credits. However, in Quebec, expenditures eligible for the 100 per cent deduction are not reduced by the amount of federal SR&ED tax credits or Quebec tax credits for research and development (discussed below). Furthermore, the amount of federal SR&ED tax credits claimed in a year is included in a taxpayer's income for Quebec tax purposes in the subsequent year.

Additional Income Tax Incentives

Manitoba, New Brunswick, Newfoundland, Nova Scotia, Ontario and Quebec each provide investment tax credits for research and development. Ontario also has a bonus deduction for research and development. These provincial incentives are described in this section.

The definitions of eligible work and expenditures for purposes of the provincial tax credits for research and development are generally the same as for the federal SR&ED tax credits. Eligible expenditures are also generally reduced by the amount of any government or non-government assistance except for purposes of the tax credits offered in Newfoundland and Nova Scotia. Under federal rules, provincial investment tax credits are considered to be government assistance and reduce the amount of expenditures eligible for the federal SR&ED tax credits and deduction in the year in which the provincial credits are receivable.

Similarly, expenditures qualifying for the bonus deduction for research and development in Ontario are the same as those eligible for the federal SR&ED tax deduction. However, the bonus deduction is not considered to be government assistance and, therefore, does not reduce the amount of expenditures eligible for the federal and Ontario tax credits and deductions for SR&ED.

Table A1.1
Summary of Provincial Research and Development Tax Incentives

Province	Tax Deduction	Additional Tax Deduction	Tax Credit
Manitoba	100%; SR&ED current and capital expenditures	Not applicable	*Research and Development Tax Credit* (1992 budget) available to corporations on SR&ED expenditures incurred in Manitoba rate: 15% non-refundable; seven-year carry-forward/three-year carry-back
New Brunswick	100%; SR&ED current and capital expenditures	Not applicable	*Research and Development Tax Credit* (1994 budget) available to corporations on SR&ED expenditures incurred in New Brunswick rate: 10% non-refundable; seven-year carry-forward/three-year carry-back
Newfoundland	100%; SR&ED current and capital expenditures	Not applicable	*Scientific Research and Experimental Development Tax Credit* (1995 budget; introduced in 1996) available to corporations on SR&ED expenditures incurred in Newfoundland SR&ED expenditures not reduced by government or non-government assistance rate: 15% fully refundable
Nova Scotia	100%; SR&ED current and capital expenditures	Not applicable	*Research and Development Tax Credit* (1994 budget) available to corporations on SR&ED expenditures incurred in Nova Scotia SR&ED expenditures not reduced by government or non-government assistance rate: 15% fully refundable

Table A1.1 (Continued)

Province	Tax Deduction	Additional Tax Deduction	Tax Credit
Ontario	100%; SR&ED current and capital expenditures	*Research and Development Super Allowance* mandatory deduction base amount: average SR&ED expenditures of previous three years rates: non-CCPCs – 25% up to base amount and 37.5% on incremental SR&ED expenditures; CCPCs – 35% up to base amount and 52.5% on incremental SR&ED expenditures	*Ontario Innovation Tax Credit* (1994 budget) available for smaller CCPCs (i.e. those eligible for the enhanced rate of federal SR&ED tax credit) on SR&ED current expenditures and 40% of SR&ED capital expenditures annual limit on SR&ED expenditures: $2 million rate: 10% fully refundable: 100% of eligible expenditures; no carry-over of unused/unrefunded credits *Ontario Business-Research Institute Tax Credit* (1997 budget) available for corporations on SR&ED expenditures incurred in Ontario under approved contracts with eligible research institutes (e.g., universities, colleges, hospital research institutes and certain non-profit research organizations) annual limit on SR&ED expenditures: $20 million rate: 20% fully refundable: 100% of eligible expenditures
Quebec	100%; SR&ED current and capital expenditures; expenditures not reduced by federal or provincial tax credits (federal tax credits included in provincial income)	Not applicable	available for corporations on R&D salaries and eligible expenditures under various types of research contracts rates for corporations: 40% for small firms (assets under $25 million) on R&D salaries up to $2 million; 40% to 20% for medium firms (assets between $25 million and $50 million) on R&D salaries up to $2 million; 20% for large firms (assets over $50 million) and 20% for R&D salaries over $2 million rates for contract R&D: 20% to 40% of eligible expenditures fully refundable: 100% of eligible expenditures two-year exemption for foreign researchers
Other Provinces and Territories	100%; SR&ED current and capital expenditures	Not applicable	Not applicable

Manitoba

Manitoba introduced a 15 per cent non-refundable Research and Development Tax Credit in its 1992 budget.[51] Qualifying work and expenditures are those eligible for the federal SR&ED tax credit and incurred in Manitoba after March 11, 1992. Qualifying expenditures are reduced by the amount of any government or non-government assistance. The federal tax credit does not reduce the amount of qualifying expenditures for purposes of the Manitoba tax credit. However, the provincial tax credit reduces the amount of qualifying expenditures for the federal SR&ED tax credit and the 100 per cent deduction for both federal and provincial income tax purposes.

The Manitoba Research and Development Tax Credit may be used to reduce provincial corporate income tax otherwise payable. Unused tax credits can be carried forward seven years or carried back three years. Non-taxpaying corporations may renounce their rights to the provincial credit in order to maximize their refund of federal SR&ED tax credits. The Manitoba Research and Development Tax Credit is administered by Revenue Canada.

New Brunswick

New Brunswick introduced a 10 per cent non-refundable Research and Development Tax Credit in its 1994 budget.[52] Qualifying work and expenditures are those eligible for the federal SR&ED tax credit and incurred in New Brunswick after February 25, 1994. Qualifying expenditures are reduced by the amount of any government or non-government assistance. The federal tax credit does not reduce the amount of qualifying expenditures for purposes of the New Brunswick tax credit. However, the provincial tax credit reduces the amount of qualifying expenditures for the federal SR&ED tax credit and the 100 per cent deduction for both federal and provincial income tax purposes.

The New Brunswick Research and Development Tax Credit may be used to reduce provincial corporate income tax otherwise payable. Unused tax credits can be carried forward seven years or carried back three years. Non-taxpaying corporations may renounce their rights to the provincial credit in order to maximize their refund of federal SR&ED tax credits. The New Brunswick Research and Development Tax Credit is administered by Revenue Canada.

Newfoundland

In its 1995 budget, Newfoundland announced that it would implement a Scientific Research and Experimental Development Tax Credit in 1996 following consultations with the business community. Effective for expenditures incurred after 1995, a fully refundable tax credit was introduced at a rate of 15 per cent for qualifying expenditures made on qualifying research and development work in the province.[53]

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51 See Manitoba (1992), p. 3.

52 See New Brunswick (1994), p. 35.

53 See Newfoundland and Labrador (1995), p. 8 and (1996).

Qualifying work and expenditures are those eligible for the federal SR&ED tax credit except that government and non-government assistance are not deducted from the amount of expenditures qualifying for the provincial tax credit. The federal tax credit does not reduce the amount of qualifying expenditures for purposes of the Newfoundland tax credit. However, the provincial tax credit reduces the amount of qualifying expenditures for the federal SR&ED tax credit and the 100 per cent deduction for both federal and provincial income tax purposes.

The Newfoundland SR&ED Tax Credit may be used to reduce provincial income taxes otherwise payable or may be refunded in cash to companies that are not in a taxpaying position. The credit is administered by Revenue Canada.

Nova Scotia

In its 1994 budget, Nova Scotia increased the rate of its Research and Development Tax Credit to 15 per cent from 10 per cent and made the credit fully refundable.[54] Qualifying work and expenditures are those eligible for the federal SR&ED tax credit except that government and non-government assistance are not deducted from the amount of expenditures qualifying for the provincial tax credit. The federal tax credit does not reduce the amount of qualifying expenditures for purposes of the Nova Scotia tax credit. However, the provincial tax credit reduces the amount of qualifying expenditures for the federal SR&ED tax credit and the 100 per cent deduction for both federal and provincial income tax purposes.

The Nova Scotia Research and Development Tax Credit may be used to reduce provincial corporate income tax otherwise payable or may be refunded in cash to companies that are not in a taxpaying position. Corporations can renounce the provincial tax credit for a specified taxation year to maximize the benefit from the federal SR&ED credit. The Nova Scotia Research and Development Tax Credit is administered by Revenue Canada.

Ontario

Ontario provides three provincial income tax incentives for SR&ED: the Research and Development Super Allowance, the Innovation Tax Credit and the Business-Research Institute Tax Credit.

The Super Allowance is an additional (or bonus) deduction for qualifying research and development expenditures. Qualifying expenditures are those eligible for the federal income tax deduction for SR&ED and are reduced by the amounts of any government assistance, non-government assistance, the Ontario SR&ED tax credits and the federal SR&ED tax credit. The Super Allowance is not considered to be government assistance and, therefore, does not reduce the amount of expenditures for federal and provincial tax credits and deductions.

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54 See Nova Scotia (1994), p. 12.

Higher rates of Super Allowance are available for CCPCs and "incremental" SR&ED expenditures – i.e. qualifying expenditures in excess of their average level for the preceding three years. Rates of Super Allowance for non-incremental expenditures are 25 per cent for non-CCPCs and 35 per cent for CCPCs. For non-CCPCs, the rate of Super Allowance for incremental expenditures is 37.5 per cent; for CCPCs, 52.5 per cent. The amount of the Super Allowance must be fully deducted in the year earned and any resulting negative balance carried forward as a non-capital loss.

The Innovation Tax Credit was announced in the 1994 Ontario budget.[55] Effective January 1, 1995, this refundable 10 per cent investment tax credit is available to smaller CCPCs (i.e. those eligible for the enhanced rate of federal SR&ED tax credit) in respect of qualifying expenditures on SR&ED performed in Ontario. Ontario rules parallel federal SR&ED rules relating to: the definition of SR&ED, qualifying expenditures and qualifying CCPCs; and the $2 million expenditure limit and its reduction based on prior-year taxable income or taxable capital employed in Canada. However, only 40 per cent of qualifying capital expenditures are eligible for the Innovation Tax Credit.

Government and non-government assistance reduce the amount of expenditures for the Innovation Tax Credit. This tax credit reduces, in the year that it is earned, the amount of expenditures for the federal SR&ED tax credit, the 100 per cent deduction for both federal and provincial income tax purposes and the Super Allowance. The Innovation Tax Credit may be used to reduce Ontario corporate income tax otherwise payable or may be refunded to smaller CCPCs that are not in a taxpaying position. The rate of refundability is 100 per cent for both current and capital expenditures. There is no carry-forward provision for that portion of the credit for capital that is not refundable.

The Business-Research Institute Tax Credit (BRITC) was announced in the 1997 Ontario budget.[56] Effective May 7, 1997, this fully refundable 20 per cent investment tax credit is available to corporations in respect of qualifying expenditures on SR&ED incurred under approved contracts with eligible research institutes. Ontario rules parallel federal SR&ED rules relating to the definition of SR&ED and qualifying expenditures. However, to be eligible for the BRITC, the SR&ED must be performed in Ontario and related to a business the corporation carries on in Canada, and there is an annual limit on qualifying expenditures of $20 million per associated group of corporations. Eligible research institutes are provincially assisted post-secondary institutions, such as universities and colleges of applied arts and technology, hospital research institutes, and prescribed Ontario non-profit research organizations. An institute may perform SR&ED directly on behalf of a corporation or a corporation must be entitled to exploit the results of an institute’s work. In the latter case, the institute must also be approved for purposes of the federal SR&ED legislation.

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55 See Ontario (1994), pp. 24-26.

56 See Ontario (1997), pp. 88-91.

Government and non-government assistance reduces the amount of expenditures for the BRITC. The BRITC reduces, in the year that it is earned, the amount of expenditures for the federal SR&ED tax credit, the 100 per cent deduction for both federal and provincial income tax purposes, and the Super Allowance. The BRITC may be used to reduce Ontario corporate income tax otherwise payable or may be fully refunded to companies that are not in a taxpaying position. Expenditures qualifying for the BRITC are also eligible for the Innovation Tax Credit – the combined credit rate for smaller CCPCs is 30 per cent.

Quebec

The 100 per cent deduction for SR&ED expenditures in Quebec is not reduced by the amount of federal or Quebec tax credits for research and development. However, effective for expenditures made after the 1996 Quebec budget[57], federal SR&ED tax credits claimed are included in a taxpayer's income for Quebec tax purposes in the year after they are claimed.

In addition, Quebec provides fully refundable tax credits for research and development performed by, or on behalf of, both large and small firms located in the province. Eligible expenditures for purposes of the tax credits are reduced by the amount of any government or non-government assistance; the provincial and federal tax credits are not considered forms of government assistance.

Where research and development is performed by a corporation, a tax credit is available for research and development salaries. Rates of tax credit are 20 per cent generally and 40 per cent for the first $2 million of these expenditures incurred by Canadian-controlled corporations that, effective for taxation years commencing after May 9, 1996, have assets of less than $25 million in the preceding taxation year. Effective for research and development salaries paid after May 9, 1996, the enhanced rate is phased down for firms with assets in the preceding taxation year of between $25 million and $50 million, specifically, by 4 percentage points for every $5 million by which the assets exceed $25 million.

Where research and development is performed under contract either:

- on behalf of a Canadian corporation by an eligible university entity, public research centre or research consortium; or

- in the form of a pre-competitive research project, a catalyst project or an environmental technology innovation project,

the rate of tax credit on eligible research and development expenditures is 40 per cent. Eligible research and development expenditures for parties dealing at arm’s length equal 80 per cent of the total amount of the contract. This adjustment to the total contract amount is made in order to account for profit margins. For contracts between non-arm’s length parties, there are two types of

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57 See Quebec (1996), p. 13 and pp. 31-37.

eligible expenditures. One type consists of expenditures that the corporation would have otherwise incurred had the corporation itself performed the research and development – i.e. the amount of research and development salaries. The other consists of expenditures to maintain an operational research and development infrastructure and a capability to host and manage research and development projects; these are limited to 65 per cent of the amount of salaries paid.

Where research and development is performed on behalf of a corporation under any other type of contract, a tax credit is also available for eligible research and development expenditures. The rules distinguish between arm's length and non-arm's length contracts. For both types of contract, the tax credit rates, including the phase down from 40 per cent to 20 per cent, are identical to those applicable to research and development performed by a corporation. For arm's length contracts, eligible expenditures equal 50 per cent of the amount actually paid under the contract in a taxation year to a maximum of the total amount of the contract. For non-arm's length contracts, eligible expenditures equal the portion of the remuneration paid to the related person that is attributable to research and development salaries paid by the related person.

A 40 per cent refundable tax credit is also granted to member corporations that pay fees or dues to a research consortium in regard to the portion of the fees or dues that can be attributed to the research and development that the consortium carries out in Quebec.

Foreign researchers can also claim an exemption from Quebec income tax on their research and development salaries for a maximum of two years.

The Relative Tax Incentive to Invest in Research and Development

The relative incentive to invest in research and development provided through the income tax system by the federal and provincial governments is compared in Table A1.2 by province and type of firm. The comparison uses the minimum benefit-cost ratio methodology.[58] This methodology yields the present value of before-tax income necessary to cover the cost of an initial research and development investment and to pay the applicable income taxes. The minimum benefit-cost ratio explicitly takes account of federal and provincial income tax incentives for research and development and corporate income tax rates. The lower the ratio, the greater the incentive for a firm to invest in research and development. A ratio less than unity implies that research and development investments are subsidized by the income tax system.

Table A1.2 reveals that, among provinces and territories, the combined income tax support provided by the federal and Quebec governments yields the relatively greatest incentive for investment in research and development for each category of firm type. This is followed by the combined research and development support in Manitoba, Newfoundland and Nova Scotia. In addition, the federal SR&ED tax incentives provide a relatively greater incentive for investment in research and development than the support offered by any of the provinces. The table also reveals that, among types of firms, smaller CCPCs are the relatively most tax advantaged. The tax system treats manufacturing and processing (M&P) firms and "other firms"

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58 See McFetridge and Warda (1983) and Warda (1994) for further information on the minimum benefit-cost ratio (or B-Index) methodology.

comparably, except in Ontario and Quebec. Other firms are tax advantaged in Ontario and Quebec because higher tax rates for these firms increase the benefit associated with SR&ED tax deductions.

Table A1.2
Minimum Benefit-Cost Ratios by Province [a]

	Smaller CCPCs		M&P Firms		Other Firms	
	Ratio	Rank	Ratio	Rank	Ratio	Rank
Manitoba	0.553	2	0.680	2	0.680	2
New Brunswick	0.585	4	0.720	3	0.720	3
Newfoundland	0.553	2	0.680	2	0.680	2
Nova Scotia	0.553	2	0.680	2	0.680	2
Ontario [b]	0.564	3	0.758	4	0.744	4
Quebec [c]	0.487	1	0.655	1	0.652	1
Other Provinces and Territories [d]	0.650	5	0.800	5	0.800	5

a Assumes current expenditures equal 90 per cent of total research and development spending and capital expenditures account for the remaining 10 per cent. Building expenses are not included.

b Assumes non-incremental expenditures only and excludes the Business-Research Institute Tax Credit (effective May 7, 1997). Minimum benefit-cost ratios for incremental expenditures only are: 0.551 for smaller CCPCs (rank = 2); 0.737 for M&P firms (rank = 4); and 0.716 for other firms (rank = 3).

c Assumes research and development salaries account for 35 per cent of current expenditures; contracts with eligible university entities, public research centres and research consortia, 30 per cent; and other contracts, 8 per cent.

d Alberta, British Columbia, the Northwest Territories, Prince Edward Island, Saskatchewan and the Yukon do not provide tax credits or bonus deductions for research and development.

Annex II
APPROACHES TO ESTIMATING INCREMENTALITY

This annex briefly reviews alternative methodologies that can be used to estimate the incrementality of income tax incentives for research and development and to obtain other information pertaining to research and development tax incentives. These methodologies can be grouped into three categories: econometric analysis, surveys and interviews, and case studies. Each methodology has its advantages and disadvantages. The choice of one methodology over another depends on three factors:

- the questions subject to investigation and the desired depth and detail of the answers required;
- feasibility, given data quality and availability; and
- timing.

Econometric Analysis

Two types of econometric models have been used to evaluate the incrementality of research and development tax incentives: they may be termed impact models and demand models.[59] In both cases, the goal is to identify a set of variables that can explain research and development spending behaviour.

Impact models compare research and development spending before and after the introduction of a research and development tax incentive. An estimate of the change in research and development spending is obtained and fully attributed to the introduction of the tax incentive. This type of model usually assumes that there is no structural change in the equation characterizing research and development spending before and after the policy change is introduced.

Impact models proceed in two steps. The non-tax determinants of research and development spending are estimated in the first step. These include sales, lagged research and development, retained earnings and output. In analyses involving firms, industry variables (e.g., spillovers) are also included as explanatory variables to control for industry factors that affect research and development investment by firms. In the second step, a dummy explanatory variable is introduced that is set to unity for the period during which the tax incentive is available and zero otherwise. For the tax incentive to be cost-effective, the estimated value of the parameter attached to the dummy variable must be positive and statistically significant, and the implied increase in research and development spending after introduction of the tax incentive must be greater than the tax revenues forgone.

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59 For further information on impact models, see Berger (1993), pp. 131-171. Demand models are discussed in Hall (1993), pp. 1-35, Mohnen (1992) and Bernstein (1986), pp. 438-448.

The main advantages of impact models are their simplicity and the fact that it is not necessary to calculate the research and development tax benefits realized by each firm or industry in the sample. Their main disadvantages are the effects of "relabelling" and the possible omission of relevant variables. Relabelling arises when taxpayers reclassify expenditures as research and development expenditures to take advantage of a research and development tax incentive, and results in an overestimation of the impact of the tax change (as reflected in the value of the parameter associated with the dummy variable). Omitted variables create a bias in estimating the impact of a research and development tax incentive, the magnitude of which is dependent on the relative importance of the variables omitted. The issue of omitted variables is particularly important in impact models because the change in research and development spending attributed to the tax incentive may instead be caused by some macroeconomic event or non-tax factor that is not captured in the model.

Demand models investigate the demand function for research and development in the period during which the tax incentive is available; both tax and non-tax determinants of research and development spending are identified and accounted for simultaneously. The price of research and development (usually a weighted average of the prices of research and development inputs) is an explanatory variable of research and development spending. This allows for direct estimation of the elasticity of research and development investment with respect to the tax incentive through the impact of the tax incentive on the price of research and development. Incrementality is calculated using the estimated price-elasticity of research and development, the impact of the tax incentive on the price of research and development and the stock of research and development spending.[60]

The main advantages of demand models are that they are better founded in economic theory and can distinguish between the short-run and long-run impacts of a tax incentive. Empirical studies have shown that the long-run price-elasticity of research and development capital is much larger than the short-run elasticity. This is due, in part, to adjustment costs in the short term; for example, the costs of reorganizing business activities and acquiring new machines and skilled labour in response to a price change.[61] It is also due to the effect that research and development has on output growth over the longer term which, in turn, stimulates additional research and development. One disadvantage of demand models is the use of a proxy for the price of research and development which is constructed as a weighted average of the prices of research and development inputs such as research and development capital and materials. As a general rule, detailed research and development tax data are also not available for use in most demand models so that assumptions must be employed to estimate the impact of the tax incentives on the price of research and development capital and research and development spending.

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60 See Bernstein (1986), pp. 438-448, and Hall (1993), pp. 1-35.

61 See Hall (1993), pp. 1-35, for a discussion of adjustment costs.

Surveys and Interviews

Surveys of companies and interviews with officers involved in managing and performing research and development activities are another method for evaluating the incrementality of research and development tax incentives, and are often used in conjunction with econometric analysis. By contacting the individuals directly involved in research and development activities, surveys provide insights into the decision-making processes of firms and policy-induced behavioural changes (e.g., attributable to tax incentives) rather than drawing inferences from the use of statistical tools. They also allow data to be collected that would not otherwise be available.

The main advantage of surveys and interviews compared to econometric analysis is the greater level of detail and understanding that can be obtained. Their main disadvantages are their relatively high cost and difficulties in distinguishing random from non-random patterns of behaviour. Substantial resources must be dedicated to the preparation of the survey questionnaire, the identification of a representative survey sample, and the choice of survey instrument (e.g., mail or telephone). The identification of behavioural trends and their causes is of key importance from a policy perspective; for this reason, surveys and interviews have, on occasion, been complemented by econometric analysis to help assess the validity of their findings. Another disadvantage of the survey methodology, especially with respect to questions of a more qualitative nature, is the natural tendency of respondents to overestimate the impacts of policies that are beneficial to them.

Case Studies

Case studies are generally narrower in their focus than econometric analysis and surveys and interviews; the latter methodologies are better suited to examining broader issues at the firm and industry level such as estimating elasticities or the increase in spending induced by tax incentives. Case studies are used to examine specific target groups or specific facets of a policy in substantial detail and are often complemented by interviews with key decision makers within the target population. While case studies have also been used to evaluate the effectiveness of research and development incentives, these incentives have been in the form of direct subsidies such as grants rather than tax assistance.

Case studies have the advantage of being able to provide substantial detail on specific sub-populations, economic activities or aspects of policy. However, they are costly to undertake and lack the ability to identify patterns of behaviour that are representative of the population as a whole. As such, case studies are not particularly well suited for evaluating the effectiveness of a broadly based policy such as the SR&ED tax incentives which provide assistance to a relatively large number of companies in all sectors of the economy. Case studies are more appropriate for analysing, for example, a research and development grant program through which funding is provided to a relatively small number of companies or industry sectors.

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